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NOTE.—Officers elected enter upon their term of office January 1, and continue until December 31, unless reëlected, except in the case of Directors for two and three years.

Death of Charles Bowler Atwood.

In the death of Charles Bowler Atwood the architectural profession has lost one more of those whose names have become known throughout the world. Atwood was a man of highly artistic temperament, and, though spasmodic in his work, but few years have passed in the last twenty-five when he has not attracted the attention of the profession by some brilliant achievement. His fortunate engagement as chief of design for the Columbian Exposition gave him an opportunity such as few architects have ever acquired to distinguish himself in exactly that line for which his teachings and study had fitted him.

D. Adler Returns to Professional Practice.

A 1st of January surprise, which was full of pleasure to the entire profession, was the announcement that Mr. Dankmar Adler, of Chicago, who abandoned the architectural field some six months previous, had decided to resume his professional work. This happy resolution will be welcomed by architects generally, for never in the history of the profession has it needed its strong men as now, when not only is the greatest wisdom and influence necessary for the proper guidance of architectural affairs, but because it seems that each month bears the record of some great name being added to the roll of those summoned from earth in the midst of their greatest usefulness.

The League Cleveland and Chicago Exhibitions.

The ninth annual exhibition of the Chicago Architectural Club promises to be the most noted of all of those held by this progressive organization. It may that the friendly rivalry of the Cleveland Club has something to do with this, for the latter now seems to be a strong second to the Chicago club in the matter of exhibitions. The programme of the Architectural League exhibition is also before the architectural artists, and if during this exhibition season the architectural student could "take in" all of these displays of architectural art he would be well repaid. It is a hopeful sign of the general growth of an art spirit that the architectural clubs of the country seem more disposed to give time and effort in the direction of these exhibitions.

The Architect, the Contractor, the Publisher; not a Fable.

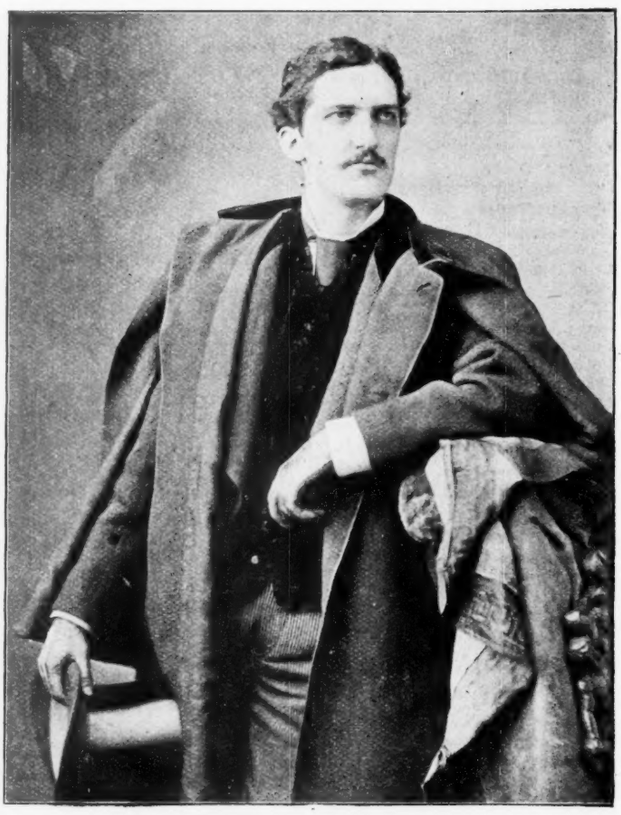
An architect, a contractor and a publisher are parties to a transaction that comes to our knowledge in a way that seals our lips as to their identity. The architect has done considerable creditable work; the contractor is prominent in his trade. The wily publisher sought the ducats, the architect fame, and the prosperous contractor was invited to foot the bill. A friendly letter from the architect to the contractor produced the desired result. In effect it stated that the magazine publisher was to publish in a forthcoming number the principal work of the architect's office, the architect stated that he thought an advertisement in the number would be of value to the contractor, and that *he hoped the contractor would be represented.* With the usual alacrity in such cases, the advertisement was ordered and advance payment made. The reason for the ready compliance of the contractor, the position in which the architect was placed by the transaction, and the moral are too obvious to need explanation.

CHARLES BOWLER ATWOOD.

BY DANIEL H. BURNHAM.

CHARLES B. ATWOOD was born in Millbury, Massachusetts, forty-six years ago. He finished his general education in the Lawrence Scientific School of Harvard University. His architectural studies were commenced in the office of Ware & Van Brunt, of Boston, which firm was composed of Prof. William R. Ware and Henry Van Brunt, both of whom were then, as they are now, critical and scholarly men. He remained with this firm until he began to practice for himself, which was about twenty years ago, but he was not long his own master. Mr. Christian Herter, of Herter Brothers, the New York firm of finishers and decorators, had obtained an order from W. H. Vanderbilt, to build for him the great double dwelling house since erected on Fifth avenue. He needed someone to carry out his architectural ideas, and he employed Atwood for this purpose, who thus became the head of the architectural department of that establishment. During his connection with the Herters his duties finally led him to Great Barrington, Vermont, where he finished the house of Mrs. Mark Hopkins, which had been commenced by other designers. He spent some years in Great Barrington before returning to New York, where I found him in the spring of 1891.

It will be remembered that John Root died in January. His death left me with a large private practice, and also with the responsibility upon me of designing and building the World's Columbian Exposition. During the winter and early spring, therefore, I was casting about for an assistant to take Root's place. After negotiating with several persons eminent in the profession and not finding the man I sought, I received two letters, one from Professor Ware and one from Mr. Bruce Price, of New York, both of them calling my attention to Atwood and claiming for him the highest rank as an architect. On the strength of these letters I made an appointment with Atwood in New York; something prevented his meeting me there, but he came to Chicago and called on me shortly afterward. Of course I was acquainted with much of his work, and the opinion of Professor Ware and Mr. Price weighed strongly in his favor. I have since thought, however, that all that preceded his coming had little weight with me compared with his own personality when I met him. I believe that had he, a stranger, introduced himself to me, the result would have been the same. I made an arrangement with him on the spot. We agreed that he should enter my private employment, but the need of him in the Exposition soon grew to be so evident that I placed him in that work instead of my own, and he joined my official staff at the end of April, 1891.



CHARLES BOWLER ATWOOD,
From a photograph, made about 1880, by Sarony.

Atwood was tall and rather slender, of elegant figure and bearing; his hands and feet were delicate and shapely; his shoulders were square and strong; his head was remarkable for its beauty of outline; his eyes were gray and lustrous; his nose was aquiline; his under lip protruded slightly. His profile was of the type which has so often distinguished great poets of all lands, whether they were actors or orators, painters or sculptors, writers or architects. His voice was sweet and of that peculiar quality which opens the door of one's heart to its possessor. Altogether, his presence was grateful to one's love of grace and dignity and to one's sense of those intangible elements we comprehend in the name of Gentleman. It was not his voice alone which threw a spell over the hearer, but his choice of words and the construction of his sentences as well. I often found myself marveling at his clearness and simplicity of statement, and the apt expressions which constantly issued from the mouth of this gifted man, even in his ordinary conversation.

After the Exposition was completed he came back to my private work and joined me as a partner in it.

From the commencement of his independent career he was much more interested in monumental works than in the lesser problems of architectural practice. He had been trained in a school of classic design, and although he occasionally used other styles, his successes were made when following most closely the Greek forms and feeling. He was fond of competitions and entered many of them; in this field he won many prizes, some of them even of national importance. He was awarded the Public Library of Boston, but for reasons which I have never heard explained, the work was done by other hands. He won the competition for enlarging the City Hall in New York. The drawings made for this were admirable; his management of the design could scarcely be better. The city of New York, however, gave up the idea of enlarging the old City Hall and finally called for competitive designs to cover the entire property. In the published statement to the architects there were conditions which made it difficult for some of the eminent practitioners of the country to enter the competition with self-respect. While the final form of the document was still under consideration, and while it was still thought that the Commission would modify certain clauses in it, Atwood was hard at work on a design for the building. This design was elaborated far enough to fully show his intentions, but it was never sent in. In this work he placed no limit to his imagination, but gave it full play, and on paper he presented such a conception of combined architectural beauty and grandeur as has never been seen in any structure built by the hands of man. These drawings will be preserved and placed where they shall ever speak to the scholar of the great genius of our friend who has recently passed away. They exhibit the best he could do, and they prove his right to be called a master.

The Vanderbilt houses are distinguished for justness of proportion, and for taste and exquisite delicacy of ornament. It has been said that two houses in the city of New York will stand the criticism of time; this Vanderbilt mansion is one of them.

Atwood's work in the Exposition is known to everyone. He designed the Art building, the Peristyle, the Terminal Station, the terraces, the bridges, the rostral columns, the Service building, the Forestry, and many minor decorative features. To his critical taste was largely due the final finish of the architecture of the Fair as a whole. One evening, late in the summer of 1893, I was in my private apartments in the Service building at Jackson park, when one of the most eminent artists of our day came in and threw himself upon the lounge, from which he sprang up with great excitement a few moments later, and seizing me by the shoulders said, "Do you realize the rank of Atwood's Art

Building among all the structures of the world?" and without waiting for a reply, he continued, "There has been nothing equal to it since the Parthenon."

In our private work he designed a building in Buffalo, which is very beautiful, and is unsurpassed by the business structures of America, the Field retail store, the Youngstown Bank, and other buildings. During the last two years his health was such as to prohibit any steady concentrated effort, but his mind was always occupied with architectural problems, and in his professional work his whole interest centered. After his death we found a room of his house wherein the shelves, tables, chairs, and even the floor were covered with great piles of illustrations of buildings and details which had appeared during the last twenty years in architectural journals and other publications which he had cut out and was assorting for the purposes of his own study. He was a great user of books, and constantly referred to the measurements made by scholars, and to the drawings and comments of masters of our art. His mind was receptive to suggestion, but still when it came to the final design he was tenacious of his own convictions. As a draftsman I never met his equal; he worked with his left hand, and his execution was marvelously sure and rapid. After a sketch had been made by him there was very little improvement to be suggested.

He was of an honorable, charitable disposition, but, as most great artists have been, was a mere child in the practical things of life.

Atwood's career has been a short one—too short, perhaps. But if one measures his success by what he has done in the brief four or five years just passed, surely no master at the *end* of his career has ever been able to point to higher or more valuable results. His designs will live, and will be the inspiration of eager students long after our century has taken its place in the shadowy past.

THE RELATION BETWEEN TESTS AND USE OF PORTLAND CEMENTS.

BY W. S. MAC HARG, C.E.*

THERE is no question that during the past twenty years there has been a great improvement in the quality of Portland cement, but it is more than doubtful if users have taken full advantage of this improvement, or whether they have properly encouraged effort in this direction.

There is a striking similarity in the development of structural iron during the same time, but, owing to a more general knowledge and thorough understanding of this material, the improvement in its use has kept pace with that of quality.

Twenty years ago the writer, with others in this country and abroad, was engaged in careful investigation of cements, and one feature to which attention was particularly directed was the effect of fine grinding on the value of Portland cement, with the result that the conclusion was universally reached that a great loss was suffered by imperfection in this respect.

At the time it was objected that the additional expense due to increase in fineness would add materially to the cost of Portland cement, so that the manufacturers, to meet this demand without increased cost, would burn the cement more lightly and so injure the quality.

It was customary at that time to test cement in briquettes made of pure cement, or neat, and it was set up by these investigators that the practical value of cements could only be determined by a test of mortar made of cement and sand, and further, that the mortar should approximate the proportions commonly used in work.

Objection was made to this by some, even by high authorities on the subject, that no uniform comparison of cement could be obtained after mixing it with a material which varied so much in the same locality or even from the same bed.

This opinion was held by Mr. Henry Faija to the time of his death, although he admitted reason in testing cement mortar, and it is probable that the fixed opinion of so high an authority has had a great effect in restraining English manufacturers from grinding cement to the fineness required in this country.

It would seem, however, that aside from any advantage to be obtained from the comparison of the results arrived at by different persons, it is a matter of the utmost importance to know the value of any cement with the sand used in the particular work, especially as the character of the sand is so important a factor in the quality of mortar.

The writer believes that fine grinding has not only increased the value of the cement mechanically, enabling it to carry a larger dose of sand, but that it has developed other qualities belonging to cement, in unforeseen directions, which may modify present views quite as much as those of other days have been changed regarding the mechanical effect.

The qualities sought in cement are soundness, unchangeableness in volume in setting, strength and adhesive power. The two latter may, perhaps, be better expressed as cohesive and adhesive strength.

The test of neat cement is really a test of cohesion, the usual test with sand a test of adhesion.

It is held by the advocates of the sand test, we believe truly, and it has been admitted by practice in this country, that as cement is seldom or never used pure, the test in mortar, or sand test, is the proof of value in cement.

A compromise has been effected, and the standard test of cement today, except, perhaps, in England, is a double test, namely, a test in tension of neat cement, and of mortar of one part cement and three parts standard sand or crushed quartz.

The argument which has led to the adoption of this standard sand test is ancient history to many, but a short statement of the mechanical value of fine grinding may be of use to the less well informed.

At the time of the investigations above referred to, the standard sieve used to determine fineness of cement powder was a No. 80 mesh, so called, really a No. 74, or 5476 holes to the square inch. By sifting cement powder on this it was found that percentages passing the sieve varied with different cements from 76.6 per cent to 85 2 per cent for English Portland, to 94.7 per cent for American Portland; and at later dates from 97.2 per cent for American to 99.5 per cent for German Portlands; English Portlands increased slightly in fineness also during this time.

It was demonstrated that the material which did not pass this sieve when made into briquettes was practically inert, and consequently was equivalent to so much sand. Thus in a purely mechanical valuation, mortar made of one part cement and three parts sand, from different cements, one 80 per cent fine and the other 99.5 per cent fine will prove as below:

With the cement 80 per cent fine;

1 barrel cement = 100 parts =	cement 80 parts and sand	20 parts.
3 barrels sand = 300 parts =		300 parts.
Mortar.....	Cement 80 parts and sand	320 parts.

Or really one of cement to four of sand.

With the cement 99.5 per cent fine;

1 barrel cement = 100 parts =	cement 99.5 parts and sand	0.5 parts.
3 barrels sand = 300 parts =		300.0 parts.
Mortar.....	Cement 99.5 parts and sand	300.5 parts.

Or practically what was intended, one cement to three sand.

These figures must be borne in mind when considering relative values of cements.

The beneficial results attained by fine grinding were so apparent, and the additional cost so slight in comparison, that a higher standard has been adopted and the sieve now used is No. 100, or 10,000 holes per square inch, nearly double the number in that used by General Gilmore, and four times that of the No. 50 sieve, the former English standard.

An instance of relative values is that of the cement cited above as 76.6 per cent fine on the No. 74 sieve twenty years ago; this has improved so that it is 90.4 per cent fine on the same sieve, and 82 per cent on the No. 100.

It was also found that the coarser ground cement weighed more per bushel, and tested stronger neat than the sifted powder of the same cement. High strength in a neat test and heavy weight, which were each really dependent upon coarse grinding, were once popularly supposed to indicate high quality in a cement; but this is foreign to our purpose in this inquiry.

Under the conditions obtaining at that time the strength in tension of test briquettes of good cements, mixed one part cement to three parts sand, was from 75 pounds to 110 pounds per square inch at the age of seven days, and Mr. Faija stated the acceptable strength of English Portland cements so mixed as from 80 to 100

pounds per square inch, with an increase of 25 per cent at twenty-eight days.

The German cements soon after this time commenced to come freely into the American market, uniformly ground much finer, so that the fineness on the No. 74 standard was from 94 per cent to 99 per cent, and on the No. 100 from 95 per cent to 98 per cent, and the American Portlands were ground to about the same degree, with a marked increase in strength in briquettes of one part cement to three parts sand at seven days, and an increase in the percentage of gain between seven days and twenty-eight days, and the standard of tensile strength was gradually raised to that required at present.

There seems to be a constant inclination to increase this standard, which is proper if it does not result in variation of ingredients by the manufacturer to attain early strength, to the sacrifice of other good and equally important qualities.

A standard of very general acceptance now is with a briquette of one cement to three sand, 150 pounds per square inch in seven days and 240 pounds in twenty-eight days; but in some instances 160 pounds in seven days and 250 pounds in twenty-eight days is asked. These requirements have been met by some cements, and surpassed by a few, tests running as high as 175 pounds in seven days and 325 pounds in twenty-eight days.

To satisfy the demand for improvement, manufacturers very generally have exercised greater care in selecting and proportioning materials, have improved their processes, and have closely watched the operation and output of their mills, with the result that each brand of established quality is shown by the tests of today to be very uniform, so that tests of any of these brands by any one individual differ very moderately. This condition is due to the system of constant inspection tests now practiced on all important works.

It is certain from comparison of tests extending over a number of years, that in obtaining an increase in the mechanical value of cements by fine grinding, we have in addition improved the conditions for chemical action — that is, increased the activity of cements.

The hardening of cement, technically the setting, is wholly a chemical process, of which all the elements are contained in the material. In this it differs from lime, as in the latter the setting is due to absorption of carbonic acid from the atmosphere. No such result is found in any cement unless in those containing free lime, which is more general in natural cements. In this case the effect is seen in the greater hardness of the skin after a day or two, where the mortar has been exposed to the air.

In a perfect Portland cement, however, this is not appreciable; the whole process is internal, and the quickness with which it takes place, or the activity, as it is termed, depends upon the perfection of molecular contact in the presence of water.

If we had the elements of the material in different solutions and brought them together simultaneously, we would probably get a complete instantaneous result in the formation of a precipitate, the insoluble double silicate of lime and alumina. The word instantaneous is used here comparatively; the chemical process under these conditions varies with different materials or elements, from an instant to periods of time of minutes or hours, but the time would be short compared with that necessary in our use of cement powder. In the use of cement the particles, in the degree of fineness obtained by grinding, are brought together with water, and the chemical union commences within a short time.

As solution, however, is but a perfect separation of molecules favorable to chemical action, it is fair to suppose that fine grinding, as it approaches more nearly the condition of solution, will increase the rapidity of the chemical action, which is the hardening we call set.

A comparison of tests, extending over the period of twenty years, will show that fine grinding has improved the chemical as well as the mechanical value of Portland cements. This comparison must be broad, not the comparison of different tests of a few cements, for there is an inherent difference in cements, depending on the materials of which they are made, and on the proportions of the components, and upon the process of manufacture; but comparing a large number of cements over this period, it will be found that activity has increased—that is, we have greater strength at seven days and a larger percentage of increase of strength between seven and twenty-eight days, which accompanies and is without doubt due to fine grinding. That this is not due to any material change in the components, is evident from there being no increase, or very little, in the eventual strength of the mortar. This is, therefore, a legitimate line in which to seek improvement, leaving all other conditions unchanged, and hence without endangering the general quality of the cement.

The old theory upon which was founded the rule that a slow-setting Portland is a better cement than a quick-setting, was that the quick-setting never attained the eventual strength of the slower. This was true of many cements, undoubtedly, and was due to inherent qualities, but it is not necessarily true under the theory of approximation to solution.

Ordinarily the load is placed gradually upon work of which Portland cement is a component, and there is no reason for a full development of strength for some months, but the increased use of steel construction has resulted in the rapid erection of buildings and the rapid application of the load.

Activity in cement is therefore desirable, but the improvement has been made in both qualities, mechanical as well as chemical, and we possess now a material much superior, both in strength and uniformity, to that of a few years ago, and have taken no steps to use it to better advantage.

The contemporaneous improvement in iron for structural purposes, to which we have referred, has been used to full advantage, probably because the material is much better understood, and users generally are acquainted with its qualities, and today the man who should make a steel beam of the same section as that formerly used in iron for the same purpose, would be laughed to scorn.

The purpose of this article is to show that economy may be safely practiced with the present quality of Portland cement, and to this end we have discussed the detail of improvement, to make it clear that it is positive and permanent.

What is yet lacking to enable us to deduce directly from laboratory records the loads and stresses which may be safely applied to cement mortar and concrete, is a demonstration by test and experiment of the strength of cement mortar under different conditions in actual work, in relation to the identical cement tested, and the relation between tensile and compressive resistance in this material. Whether the character of the material admits of this is uncertain, but such data are unnecessary to the present argument. The evidence from practical use of inspected cements is entirely sufficient to warrant any change herein advocated.

One who has watched, over the period we have considered, both the tests and use of Portland cement, with a knowledge of the components and inherent qualities of the material, can form a very trustworthy judgment of the practicable economy.

Careful experiments have been made during this period on mortars of one part of cement to one, three, four, five, six and eight parts of sand, on many of the cements in the market, and these cements have been inspected where used, and from these, taken in connection with the formulæ used in practice for mortar and concrete, safe deductions may be made.

As illustrative of the different values of cements shown in tests, the subjoined table taken from the records of tests made by the writer in ordinary business is evidence. These cements are all at present in this market, and the samples from which the tests were made were largely drawn on work in process of erection and are averages or fair values. They are all gauged in the same manner, mostly by the same person, and are therefore relatively true. The fineness is the percentage passing a No. 74 sieve; the briquettes are of mortar gauged with sand as noted, and the result given is the breaking stress per square inch in tension.

	Fine.	1 Cement, 3 Sand.			1 Cement, 4 Sand.			1 Cement, 5 Sand.		
		7 Days.	30 Days.	3 Mos.	7 Days.	30 Days.	3 Mos.	7 Days.	30 Days.	3 Mos.
No. 1	86.8	74	107	153*	56	82	104	42	70	91
" 2	97.9	94	144	188	70	99	139	52	74	103
" 3	97.7	119	158	202	85	121	147	67	87	114
" 4	95.8	134	182	211	99	130	164*	76	100	129
" 5	97.2	144	215	267	95	162	186	69	119	158*

It is plain from this that there is great difference in the value of cements, and tests by another person will show relatively the same. Further, each breaking weight is substantiated by all other tests of each cement made by the writer, so that these are

substantially true values. Mortars of equal strength are marked with an asterisk.

The formula commonly used in this city for concrete of natural cement of good quality, but of much less strength than Portland cement, has been and is one part of cement to two and one-half of sand and five of broken stone, in footings and foundation work. When Portland cement began to be used freely for this purpose in higher buildings, loads were increased somewhat, and the same formula was used with success due to the better material, but no factor was considered except safety. Portland cement has been greatly improved—perhaps doubled in value—yet no change has been made in the formula, except in isolated cases where a mixture of one cement, three sand and six stone has been used. Attention has also been given to the manipulation of materials, and much stronger and more uniform concrete is now made.

We will proceed now to apply this practical knowledge of the qualities and values of Portland cements, by the consideration of actual work done with tested cement, taking a certain building, of fourteen or fifteen stories, one of several erected five or six years ago, in all of which cement of the same grade was used in the footings, and all of which are in perfect condition so far as foundation is concerned, having settled uniformly. The cement used largely in the footings of this building was No. 1 in the table, gauged one cement, two and one-half sand and five stone, and the concrete was mixed well and well placed. The result has been all that could be wished, the building is stable, and the strength of the concrete is of course greater than when the load was first on.

The strength of the concrete is equal to the adhesive strength of the matrix, or mortar which binds the stones, and this strength is that indicated by the test with sand. The gauging in the table, No. 1, one cement to three sand, is close enough to that in the work for our purpose, and by following the table through it will be seen that two other gaugings of mortar are of equal strength, No. 4, one cement to four sand, and No. 5, one cement to five sand.

It is evident that either of these mortars could be substituted as a matrix instead of No. 1, and the concrete would be of the same strength as that now in the work; but in addition, with No. 4 we have made 33 per cent and with No. 5 66 per cent more mortar to be used as matrix, and adding these proportions of stone we have with the same amount of cement produced, in one case, 33 per cent and in the other 66 per cent more concrete in place and of equal strength.

We have not yet reached the full economy to be obtained by proper gauging. The maximum strength of concrete with any matrix is attained when the interstices or voids in the broken stone are perfectly filled in the compacted mass; any added matrix is a waste, as it would have carried its proportion of stone, increasing the mass by three parts instead of one. In important and well-conducted work it is customary to determine by measurement the volume of voids in the broken stone used, and the matrix is proportioned slightly in excess of this volume, that in case of slight variation in the stone there may be sufficient mortar. This determination is easily made by using a tight box holding one cubic foot, in which the stone is compacted as in the work, and the box then filled with a measured quantity of water. The broken stone for concrete should be graduated in size so as to reduce the volume of voids to a minimum, the matrix being the costly element of concrete, and with graduated stone the volume of voids is from 25 per cent to 30 per cent of the compacted mass; therefore one part of mortar or matrix to three parts of broken stone is approximately the economic proportion.

In the formula 1 : 2.5 : 5, of cement, sand and stone, it is evident that there is neither economy nor additional strength, and analyzed we find that one part of cement to two and one-half parts of sand will give us 2.7 parts of mortar, to which is added five parts of stone, leaving one part of mortar in excess and therefore producing six parts of concrete in the mass. If the 2.7 parts of mortar had been gauged with stone in the given maximum for economy and strength, the resulting concrete in place would have been 8.1 parts, a gain of 33 per cent in the mass. In many buildings now standing in equally good condition, the concrete was gauged by the same formula, but with a cement which gauged one cement to three of sand tests enough below that used above to make it certain that the gauging of No. 1 in the table, one to three, is of ample strength for such work. As the voids in the sand commonly used for concrete in this city are about the same as those in the broken stone cited, the gauging one cement to three sand is also the economic value of mortar, and this has been shown to be of sufficient strength by actual use. If for any other purpose a stronger mortar is required it should be obtained by using a higher grade of cement, for economy, and this may be done among the cements shown in the table for any strength to twice that of No. 1.

If in the case we are considering these economic values of cement and mortar had been used, we would have obtained from one of cement and three of sand, three parts of mortar, and from one part of mortar and three of stone, three parts of concrete, nine parts of concrete in all, instead of the six parts really obtained; that is, the cement used should have made fifty per cent more concrete, and in footings requiring 3,000 barrels of cement with the old formula, with the new they would be built of sufficient strength with 2,000 barrels, a saving of from $2,000 to $2,200; these quantities throughout, if not exact, are relatively correct.

We have only considered to this point the proportions with a single cement of sufficient strength, No. 1 in the table; for full economy we must take into account the values of different cements. The mortar made with cement No. 1 in the proportion of one cement to three of sand having been shown by experience to have sufficient strength, there is no reason why any other mortar of equal strength should not be substituted for it as a matrix in the concrete. Looking through the table we find that a mortar of equal strength may be made with cement No. 4, using one part of cement to four parts of sand, and with cement No. 5 using five parts of sand. As the strength of concrete depends on the strength of the matrix we may by using these mortars, keeping the proportion of matrix to stone one to three as before, obtain in one case 33 per cent, and in the other 66 per cent more concrete, with the same volume of cement, than was obtained with cement No. 1, and of equal strength.

Under these conditions, if we measure the economy of different cements, gauged in proper proportions, we shall find that they vary greatly in true value. These values may be tabulated as follows; taking No. 1 by both the old and new formula for complete comparison of economy with the common method of gauging, and No. 4 and No. 5 by the new formula, the matrix with the new formula filling the voids and in all, except the first, of equal strength:

No. 1....	1 c.	:	2.5 s.	:	5 st.	=	6	volumes of concrete in place.	
" 1....	1 "	:	3 "	:	9 "	=	9	"	" "
" 4....	1 "	:	4 "	:	11.5 "	=	11	"	" "
" 5....	1 "	:	5 "	:	14 "	=	13.5	"	" "

An allowance is made in the quantity of stone used with No. 4 and No. 5, for a possible shrinkage in making the matrix, so we may not overestimate the economy. The economy due to the use of high-grade cements is shown above in the concretes made by the new formula; the amount obtained from No. 4 being 22 per cent greater, and that from No. 5 50 per cent greater than that from No. 1; while the difference in comparison with that made by the old formula is much greater. It is evident that in the latter case only about one-half the amount of cement is required to produce an equal amount of concrete of equal strength—that is, in the supposed case requiring 3,000 barrels of cement but 1,500 would be used, a saving of $3,000 to $3,500 in the item of cement.

These illustrations show conclusively that a change may be safely made in the common formula for gauging concrete, and while it is not intended herein to make any new formula, we will outline a system which will recognize different values in cements, and which will also guard against the substitution of inferior cements.

The present standard is of value as fixing the highest grades of cement, and there is no reason for displacing it, but as has been shown in the illustrations, many good cements may not satisfy it, and still are sufficient for almost any work.

Let this or any agreed standard be used in classifying cements, but for working purposes let the cement be gauged with sufficient of the sand with which it is to be used to show a strength in the test briquette at seven days of 75 pounds, 90 pounds, 100 pounds, or any determined upon as sufficient, as shown in stable work of the same kind, and require a certain percentage of gain in these briquettes at twenty-eight days and three months. Let the cement and sand be gauged in this proportion on the work, and maintain the system of inspection tests to which all Portland cements should be subjected.

Under such a system the saving would pay the cost of inspection many times over, the user would save money now wasted,

and the manufacturer of high-grade cement would receive a direct reward for his efforts, while others would be incited to improve their output in true value.

Cements would rapidly fall into classes, of which the prices would represent value in work, while at present, in ordinary work, there is no reason for paying any more for cement than the price of the cheapest sound Portland cement in the market.

SLOW-BURNING AND FIREPROOF CONSTRUCTION.

BY DANKMAR ADLER, ARCHITECT.

IT is difficult to imagine a greater divergence between theory and practice than that which is illustrated by the difference between our ideas of the "slow-burning" or the "fireproof" building as they should be and the conduct of many buildings bearing those appellations when attacked by fire.

When structures intended to be "slow-burning" burn quickly, and when "fireproof" buildings are materially injured or nearly destroyed by the burning of their contents or by fires in neighboring buildings, we cannot evade the conclusion that the current theory and practice of "slow-burning" and of "fireproof" construction must be modified.

Proceeding first to the consideration of the theory and practice of "slow-burning" construction, it appears that the fire record of the past few years in Chicago, Boston and other cities has shown clearly that "mill construction," as ordinarily defined among us and as described and prescribed in our local building ordinance, has not been found sufficiently "slow-burning" in practice, and can no longer be so considered in theory.

The large timbers placed far apart and the thick floor plank, which distinguish and characterize the system known as "mill construction," certainly do not ignite as readily as the thin joists and floors, and eliminate entirely from buildings the flues formed by joists, floors and ceilings of the older and ordinary system of construction. But the heavy timbers and floors when once ignited make hotter and fiercer fires than the lighter material of the old-construction system, and the flames when once fairly under way spread more freely in all directions over the broad surfaces of resin-charged timber than they seemed to do when confined in the wood and plaster flues of the ordinary construction, where generally they appear to have been carried in one direction only.

Another phase of "slow-burning" construction had a short vogue about fifteen years ago, when it was my good fortune to meet in the late Mr. Martin Ryerson a most enlightened and liberal client, for whom I constructed a number of "slow-burning" buildings embodying certain suggestions made by Mr. Sanford E. Loring and Mr. Peter B. Wight. I used the ordinary joist construction, covering the joists on the under side with thick tiles of porous terra cotta (made of fire clay), while on top of the joists was laid a layer of mortar deafening nearly two inches thick. The pillars and girders were protected by means of porous terra cotta, and the partitions were built some of brick, some of hollow tiles and others of wood with brick filling. To prevent lateral spread of fire between the joists, brick partitions were built over each girder from its top to the under side of the flooring, while the progress of fire between furring strips was checked by projecting ledges of brick.

THE FIRE IN THE RYERSON BUILDING.

The upper story of one of these buildings, 116 by 170 feet in area and 16 feet high, was used as a manufactory of straw hats and was filled with highly inflammable material. The building was struck by lightning and most of the shelves, benches, cupboards, in its top story, all filled with straw braid and hats, were ignited and burned, creating, as might have been expected, a very hot fire. The damage to the building was confined to the burning of some window frames and sash, the breakage of glass and the burning of part of the floor down to the deafening.

The objections to the general adoption of this system lie in its cost and in the possibility of failing to secure its "slow-burning" characteristics by reason of the difficulty of attaining perfection of workmanship in many matters of detail.

The same system can be adopted and applied to mill construction without necessitating so close a watch upon perfection of every detail. Its expense will still be very considerable and almost equal to that of "fireproof" construction. Besides, the heavy joists and girders, as also the solid timber floor, will be exposed to danger from dry rot, owing to the exclusion from them of air circulation brought about by their fire-resisting coverings and inclosures.

The opportunities for noting the effects of fire in "fireproof" buildings have not been numerous. The following have come under my observation: *a*, Two fires in the Auditorium Building; *b*, Three fires in the Schiller Building; *c*, The fire in the Athletic Clubhouse; *d*, The fire in the Manhattan Bank Building on Broadway, New York.

THE FIRES IN THE AUDITORIUM BUILDING.

1. A portion of the eighth story of the building was used as a glazing shop. As the glass was taken out the packing boxes and straw were piled in two rooms set apart for this purpose. At a time when these rooms were packed from floor to ceiling with this highly inflammable material, the same caught fire, and, being out of reach of any fire-extinguishing apparatus, burned for nearly an hour until entirely consumed. The injury to the building was confined to the burning of a number of window frames and sashes, to breakage of glass, and to the burning of floor material. Neither the partitions, built of hollow porous terra cotta blocks, nor the iron pillars and steel beams, protected by solid porous terra cotta tiles, received the slightest injury, nor was the porous terra cotta itself damaged to any considerable extent.

2. The other fire in the Auditorium was caused by the carelessness of a cook who spilled a pot of melted grease over a red-hot range. The blaze of the burning fat carried by strong air currents ignited the insulating covering of a large number of electric light wires, which, in accordance with a custom fortunately becoming obsolete, were carried on a wooden conduit, and spread the blaze of burning rubber and burning wood for a distance of several hundred feet in various directions, also setting fire to some shelves and kitchen stores. Here again the beam covering of porous terra cotta protected the bottom flanges of the I-beams from injury.

THE FIRES IN THE SCHILLER BUILDING.

1. The first was identical in cause and effect with the second fire in the Auditorium.

2. The second was similar in character and effect, but its cause was different. A workman employed in repairing the damage of the first fire slipped from his footing on a scaffold. In falling he entangled some electric light wires with a gas pipe, caused a short circuit, melted the pipe, ignited the gas, the rubber wire covering, wooden conduits, and kindled a blaze which caused more damage than the first one.

In the Schiller building the protective material for the bottom flanges of the first story beams is the plaster board called "Mackolite." It protected the bottom flanges of the first story floor beams and suffered no injury itself.

3. The third fire was a much more serious affair. Separated from the Schiller building by a court about twenty-eight feet wide was a four-story brick building, with ordinary wooden internal construction which caught fire. It was used as a cigar factory, and the tobacco, cigar boxes, etc., together with the structural material of this building, made a fierce blaze. The wind blew from the east toward the Schiller building, whose exposed wall was riddled with large windows. The glass in these windows was soon broken, and the windows, sashes and frames ablaze, and the interior of the east tier of rooms exposed to the heat from the burning cigar factory and their own window frames and sashes. The heat was intense enough to break the glass in the openings on the west side of the exposed rooms, and even on the opposite side of the corridor which the breaking of the glass in the openings toward the fire had thus exposed. Still the damage from fire within the rooms was confined to the blistering of paint and scorching of such office furnishings as were near the windows, the piers between the windows in the east wall and the interior partitions acting as protective shields against the heat of the flames carried over by the east wind. The damage to the external walls was, however, quite serious. The upper part of the building consists of a steel skeleton, covered through the height of several stories with hollow tiles made of ordinary brick clay — not of fire clay — while through the remainder of its height the steel skeleton is covered with terra cotta. The effect of the fire upon the hollow tiles was to break them in such manner as to cause the outer shell to fall off, leaving only the inner shell of the tiles to protect the steel frame. In many instances even this fell out, leaving the steel almost fully exposed to the flames which were being carried over

by the east wind from the burning cigar factory. The terra cotta used as wall covering suffered but little injury. The walls and partitions of the Schiller building afforded sufficient protection to the firemen to enable them to direct quite a number of streams of water from under their shelter into the blaze of the east side of the court, which, together with water poured upon it from other points of vantage, extinguished the fire before it had had time to distort or seriously weaken the structural framework of the Schiller, but not before it had consumed almost everything combustible in the cigar factory in which the fire had originated.

THE FIRE IN THE ATHLETIC CLUBHOUSE.

The fire in the clubhouse of the Chicago Athletic Association occurred under peculiar and rather unusual conditions. The building was full of wooden scaffolding and of acres of wooden wainscot, wooden doors, and combustible finishing material of all kinds, all stored in the building, some set in place but most of it standing and lying about; while chips, shavings, etc., were scattered all over the building; everything in the best possible condition for quick combustion. The fire therefore spread quickly and burned fiercely. Everything combustible was consumed, and as in the Schiller, the hollow fire clay tile was chipped and cracked and left the structural metal exposed to the action of the fire, from which it suffered some injury but not enough to seriously impair its carrying power.

THE BROADWAY FIRE.

The Broadway fire was characterized by the same method of attack noted in the case of the Schiller building. A brick building with internal construction of wood was burning fiercely on the opposite side of Bleecker street, which is about forty feet wide. The south wall of this "fireproof" building, like the east wall of the Schiller, was riddled with windows, whose glass broke and whose sashes and frames took fire. But the iron pillars and beams were, some altogether, without protective covering, and none as well protected as those in the Schiller building and the Athletic Clubhouse, for they were distorted by the heat to such an extent as to bring about a partial collapse of the upper stories of the building.

The condition of the structural ironwork, as left after the three last mentioned fires, shows that in each case another hour of exposure to the hot blaze would have wrecked the building.

The fireproof protective covering of the iron and steel work proved itself quite serviceable, as witnessed by the difference in behavior of the unprotected beams and pillars in the Broadway building and that of the protected ones in the Schiller and the Athletic. Had the insulating coverings in these two buildings been given an efficiency double that developed in the fire, which could have been accomplished by either of several well-known methods, these two buildings would have gone through the fires to which they were exposed without developing any weakness of their fire-resisting qualities.

But if these buildings had had interiors of ordinary joist construction, or "mill construction," they would themselves have added fuel to the flames and would have communicated fire to their neighbors as did the Vallens cigar factory to the Schiller and the Keep building to the Manhattan Bank building. Therefore their existence, even if they were not absolutely fire resisting, was beneficial to their owners, their occupants, and to the owners and occupants of abutting buildings.

Therefore, construction like that of these three buildings cannot, in the light of experience, be considered "fireproof" in the sense of being proof against injury or destruction by fire. And it must be admitted that it is impossible to construct, for existing conditions of occupation and use of buildings, any structure which is unqualifiedly "fireproof." For we can neither live nor can we transact business in the only really fireproof structure known to us: the vault or crypt built of the most refractory firebrick, carefully guarded against communication with adjacent and outer space by heavy inclosing walls of the same material. Our buildings must have windows, and window glass will break if exposed to heat. As soon as the glass is broken, burning embers will be carried by the wind into the exposed building and will probably set fire to its contents, whether it be merchandise or furniture. Again, such combustible contents of incombustible buildings may be ignited by other causes, and if there is enough of such combustible contents to kindle and maintain a hot blaze and one which, despite the efforts of the fire department, threatens to be of long duration, the problem becomes one of the efficiency and permanence of the fire-resisting powers of the insulating and protective covering applied to the metallic members of the structural framework of the building, upon the material, quantity, form and method of application of which too much care cannot be expended.

But there are limits to the effectiveness and endurance of even the best protective insulating coverings which can be devised for pillars and beams. These limitations preclude the possibility of constructing a really fireproof building unless the extent as to intensity and time of exposure can be limited within the confines of a reasonable factor of safety for the insulating coverings. And this consideration applies to some extent even to heavy brick walls which I have known to receive serious injury from long continued and intensely hot fires.

Such limitation may be effected:

1. By minimizing the number and size of the windows and doors which offer points of attack to fire from without, and by protecting these openings by means of incombustible shutters.

2. As the volume and intensity of a fire and the rapidity with which it gains headway are vastly greater in very large rooms than in small ones, excessively large spaces can be subdivided by heavy brick walls.

3. Means for preventing elevator and stair wells from acting as shafts for the transmission of fire from story to story can be devised and adopted.

4. Standpipes and fire hose can be provided at frequent intervals in all fireproof buildings, and can be arranged for connection with fire engines at the sidewalk level.

5. Ready means of access can be provided for the fire department to all parts of fireproof buildings, together with sheltered places from which they can successfully attack a fire which has broken out among its contents.

6. The employes of large fireproof buildings can be organized and drilled with special reference to extinguishing incipient fires.

7. Automatic sprinklers can be used in all fireproof structures, excepting perhaps hotels, apartment houses and office buildings.

As I have observed the use and abuse of windows in buildings, I find that people insist first upon having very large windows and then proceed to reduce their lighting value by the application of shades and hangings, by signs and advertising pictures, and by permitting the accumulation of heavy coatings of dust and soot upon the glass. In most cases much smaller windows, left unobscured by hangings and signs and kept scrupulously clean, would satisfy every legitimate want and would greatly diminish risk of fire. If shutters are used they can be more easily applied and handled and be made more efficient generally for smaller windows than for larger ones.

It is contended by merchants that immense rooms are necessary for the transaction of their business. They maintain that the enormous rooms which characterize the American business house of today are indispensable for the administration and supervision of business and for the convenience of the purchasing public and as a means of impressing purchasers with the vastness and magnificence of their trade palaces. When I enter and pass through any of these establishments I find my vision hemmed in by banks of shelvings and my movements confined within the limits of narrow aisles. Rarely can I get a comprehensive view of even a tenth the area of the entire room. All conditions of possibility of oversight and communication seem to be such as to be as well met if these acres of space were subdivided by brick walls into rooms of smaller dimensions, so that the quantity of inflammable chattels within any subdivision would not be sufficient to make, when once ignited, an uncontrollable fire.

Elevators and stairs inclosed by brick walls and iron doors would occupy more space than do the open stair and elevator wells, and it would be more difficult to give them the ornateness of finish with which we treat the grilles and railings of open elevators and stairs. But are not these considerations of little moment when compared with the diminution of risk of loss of life and property which will accompany the isolation of stair and elevator shafts?

I have been asked, why take these elaborate precautions for preventing and extinguishing fires in "fireproof" buildings? Do they not imply a want of confidence in the fireproof qualities of the buildings? I answer that, as it cannot be denied that every building may be injured, if not destroyed, by the burning of its inflammable contents, the necessity for adopting efficient protective measures against such injury or destruction increases with

the money value of the building. The more nearly indestructible by fire we make the structure, finish and equipment of a building the greater will be its cost, and hence the greater the necessity for anticipating and for removing in its incipiency every destructive agency, among which fire is ever present.

I wish again to call attention to the fires in the Schiller, in the Athletic Clubhouse, and in the Manhattan Bank building. Although each of these fires found its building vulnerable, yet in every instance the conditions were such as to demonstrate that a non-fireproof building under the same conditions would not only have been entirely destroyed, but would have spread the flames over a greater area and to other buildings.

The situation as regards "fireproof" buildings may be summarized thus: As they now are, their structure is incombustible, and proof against the effects of fires of moderate intensity and duration. The efforts at improvement should tend to reducing their vulnerability as to attacks from without, by presenting to external fires more wall surface and less glass, and further by interposing between external metallic structural members and a possible fire more incombustible and fire-resisting material than is now our custom.

With regard to the interiors of fireproof buildings we should reduce the intensity, volume and duration of the fires possible within their contents, by the introduction of as many dividing walls as possible, and should use more care than has been our wont to make the fire protective coverings of pillars and beams so heavy and substantial that they cannot be displaced or injured by either fire or water.

In choosing between "fireproof" and "slow-burning" construction, let us remember that the fireproof building is at least incombustible, even if it be not indestructible by fire, but that the other may or may not be "slow-burning," and that it is both combustible and destructible by fire, and hence by far the inferior system of construction.

In the foregoing I have written nothing new, nothing that has not been better and more forcibly stated by others, and I have left unsaid many things pertinent to the subject of this article. But its scope is so great that volumes would be required for its exhaustive treatment, and its importance is such that it is proper that everything which has been said and remained unheeded should be reiterated again and again until finally the destructive conflagrations which now are so frequent in our American cities shall have become mere matter of history and no longer of almost daily occurrence.

(To be continued.)

RESULT OF THE CLARK MEDAL COMPETITION.

PERHAPS the most important event of the year in the Chicago Architectural Club is the annual competition for the Robert Clark testimonials, held under the auspices of the Chicago Architectural Club, and the subject usually brings out the full strength and designing ability of the draftsmen of the United States who come within its conditions. The seventh annual competition, just closed, included thirty-two competitors, and five medals were awarded by the adjudicating committee, Messrs. Louis J. Millet, chairman; R. C. Spencer, Jr., and Howard Shaw.

The subject was "An Art School," and medals were awarded as follows:

Gold Medal—Addison B. Le Boutillier, 19 West Cedar street, Boston, Massachusetts.

Silver Medal—William Leslie Welton, 4 City Hall square, Lynn, Massachusetts.

Bronze Medal—John F. Jackson, 813 West Ferry street, Buffalo, New York.

First Honorable Mention, Bronze Medal—Harry C. Starr, C. A. C., 27 Forty-third street, Chicago.

Second Honorable Mention, Bronze Medal—Edward T. Wilder, C. A. C., 1120 Home Insurance Building, Chicago.

The complete list of competitors is as follows: J. F. Strobel, Jr., Rochester, N. Y.; Charles S. King, Rochester, N. Y.; Edward E. Noxie, Buffalo, N. Y.; Edward T. Wilder (C. A. C.), Chicago; Fred Pischel (C. A. C.), Chicago; Julius Wenig, Chicago; Harry C. Starr (C. A. C.), Chicago; Ivar Noess, Chicago; Charles P. Shewey, Chicago; Hugo H. Zimmermann, Chicago; William J. Freethy, Winchester, Mass.; William H. Schuchardt, Milwaukee, Wis.; Edward O. Nelson, Chicago; Oscar Blümner (C. A. C.) Boston, Mass.; Oscar M. Hokanson, St. Paul, Minn.; John Bloore, New York, N. Y.; William V. Light, Wauwatossa, Wis.; Louis E. Destremps, Fall River, Mass.; Bernard Edw. Jamme, Staten Island, N. Y.; J. Thinnes, Jr., Brooklyn, N. Y.; Dudley C. Chaffee (C. A. C.), Chicago; Rudolph Moeller, New York, N. Y.; Edmund L. Simmons, Landsdowne, Pa.; B. F. Mitchell, New York, N. Y.; John W. Johnson (C. A. C.), Dayton, Ohio; S. Lewis Goodwin, Worcester, Mass.; Frank L. Malby, Washington, D. C.; William Leslie Welton, Lynn, Mass.; John F. Jackson, Buffalo, N. Y.; Addison B. Le Boutillier, Boston, Mass.; *William H. Hudswell, Jr., Brooklyn, N. Y.; *W. M. Maccafferty, Brooklyn, N. Y.

The project for the competition was as follows:

AN ART SCHOOL.

A gentleman wishing to share his large and valuable collection of paintings, statuary and architectural fragments with his townsmen, has decided to place them in a building which he proposes to erect for the study of architecture, painting and sculpture.

The building is to face the town square, and is to be not more than one hundred and fifty feet in its greatest dimensions.

It shall consist of one story and a high basement.

The first story shall contain the following rooms:

1. A large entrance gallery for the placing and hanging of statuary and paintings. This hall should be the main feature of the plan, and should be carefully arranged for convenient and advantageous display, without destroying the architectural effect. It may be one continuous hall or divided into parts, at the discretion of the architect. It may be lighted from above.
2. A large glass-covered court to contain architectural fragments.
3. An amphitheater, to seat about two hundred, for lectures on art subjects. A library and an assembly hall.
4. Four classrooms. These rooms should be well lighted and of easy access to the court and gallery.
5. A janitor's room and an office for the custodian. These rooms may be small, but should be conveniently placed either at the entrance to the building or to the grounds.

As the number of the students is limited, the size of the rooms is of less importance than the circulation, convenience and artistic beauty of the whole.

The building, being the home of the arts, should be pure in style and classical in feeling, though not necessarily archæological.

Drawings required, namely, one plan and one section at the scale of one-sixteenth of an inch to one foot, and the front elevation at the scale of one-eighth of an inch to one foot.

REPORT ON THE CLARK MEDAL COMPETITION, 1895.

The competition for the Clark medal, held under the auspices of the Chicago Architectural Club, consisted of thirty-two designs variously rendered in color monotone, and pen and ink.

Two of the designs, through neglect of either the author or the transportation companies, reached the exhibit on a later date than that set for adjudging the medal, and were in consequence not critically examined by the jury. The main criticism that can be made of the designs in general is, that while the subject was one which manifestly called for great simplicity in planning, a large proportion of the designs exhibited far too elaborate and complex plans; as a consequence, many of the designers, in order to introduce added and unnecessary features, and still keep to the given dimensions, had reduced the actual sizes of intercolumniations, passageways, etc., in a manner which would, in execution, render them impracticable. Some of the plans were entirely unsymmetrical, and these were generally so devised as to allow of a symmetrical elevation, a result which evidently taxed the designer's ingenuity to the extent of necessitating certain expedients, the use of which was hardly in conformity with the dignity of the subject.

Another feature, shown in a number of the drawings, and which the jury considered an error, was the placing of the Architectural Court and the Lecture Hall in symmetrical positions on either side of the main axis. The jury took the position that the proper arrangement was that in which the main gallery, the court and the lecture hall were all in the axis of the building, with two schoolrooms and the library on one side, balancing two schoolrooms and the Assembly room on the other.

It was evidently not the intention of those who wrote out the subject that any importance should be given to the staircase, which merely led to a basement floor, the purpose of which was mainly to add to the height and dignity of the elevations, and to be used only as an accessory. In consequence the staircase, or staircases, together with the washrooms, were evidently best placed at the ends of passages, or in such minor portions of the plan as resulted from the general distribution of rooms.

As regards elevations, a proper classic spirit was considered to be best fitted to an educational building. Elevations which clearly showed the main subdivisions of the plans by the varying heights and treatment of the different parts met with the most favorable consideration.

The jury inquired very carefully into the possibilities of the side and rear elevations of the different designs. Inasmuch as no drawings of these elevations were required, the matter was more or less one of conjecture. In a number of cases, however, it was found that far too little thought had been given these important points, and a number of the side elevations would have exhibited most unpleasing effects

Design No. 30 seemed to solve the various difficulties in the most acceptable manner, and in consequence was awarded the gold medal.

The plan was entirely symmetrical, particularly well balanced, and the elevations pleasing and dignified. The entire lack of ornamentation, however, in the friezes, particularly of the central motif, was part of a general paucity of enrichment, due undoubtedly to the too hurried manner in which the elevation was rendered. The proportions were well studied, however, and the possible usefulness of the basement floor was suggested by a few well-proportioned openings which in no way detracted from the solidity of this part of the building.

The skylight of the court, rising above the remainder of the building, was a favorable point, as was the separate entrance in the rear of the lecture hall. The section failed to give adequate recognition, however, to this lecture hall, and the proportions of pilasters on the well-devised gallery of the court was not quite satisfactory.

Design No. 28 was awarded the silver medal on a pleasing design, the plan of which contained rather too many subdivisions. The staircases and the toilet rooms were housed at the expense of the lecture hall, the shape of the latter being, in consequence, somewhat mutilated.

The three divisions of the main gallery should have been centered on the same axis, and better possibilities for a side elevation would have resulted if the lateral end motifs had been made to project instead of the intervening classrooms. The acroteria on the side elevation would give rise to the usual difficulty of having it butt against the pediment in an unsatisfactory manner. The care and taste displayed in the rendering of the section was quite as commendable as rarely met with in this competition. The effect of the elevation, if built, would undoubtedly be quite impressive and in keeping with the purpose of the building.

Design No. 29 (bronze medal) was scholarly and particularly well rendered. The plan lacked circulations, and the appearance of the amphitheater in the side elevation would probably give an unpleasant skyline. One quality of the plan was the possibility of reaching the schoolrooms directly from the basement. While this was not required, it forms a very good addition to the practicability of the plan, doing away with the necessity of having pupils passing through the galleries, etc. The approaches to the building were given the proper study, and the results were very pleasing. Several difficulties in the manner of roofing the building were suggested by the further examination of the design, and the box-like appearance of the large gallery, rising high above its surroundings, detracted somewhat from the excellence or the elevation, the center motif of which was excellent.

Design No. 7. Honorable mention.

The arrangement of the plan was, in its simplicity and directness, perhaps the best and most typical expression of the subject presented. The elevation, however, was inferior to it, being far too low and small in treatment. The central motif seemed crushed in effect, by a comparatively huge attic. The intercolumniation of the pilasters was uncommonly wide, and the attempt at

*Received too late for adjudication.

an ornamental frieze between capitals, subject to criticism. The section showed in the covered court a large bare wall above a low arcade, and the detail here had evidently not taken up much of the author's time and attention.

No. 4 was awarded the second honorable mention on a fairly good plan, in which, however, the main gallery lost some of its effect by being subdivided. While the elevation possessed many good points, it had a somewhat crushed appearance, and the central portion contained more units and motifs than were necessary.

LOUIS J. MILLET, *Chairman.*
HOWARD SHAW.
ROBERT C. SPENCER, JR.

NOTES FROM OUR FRENCH EXCHANGES.*

ARCHITECTURE IN THE FAR EAST, AND THE MONUMENTS OF BANKOK, SIAM.

NOTWITHSTANDING what certain most enthusiastic travelers have said, one must not expect, unless a rude awaking is desired, to find among the monuments of Bankok anything that will compare with the old temples of India. Everything is extraordinary and glittering, but as unsubstantial and fragile as the decoration of a fairy spectacle. Stucco and plaster soon scale off under the double action of the noon-day heat and the dews of night.

The gem of the collection is the Wat-Pra-Keo. The chapel, sacred above all others, where rests the palladium of the city, the famous emerald Buddha brought from the ancient capital of Laos when that city was captured by the Siamese in 1777. The statuette is simply jade, but of the most remarkably fine workmanship. It is, in its diminutive dimensions, of only about 18 inches, the most beautiful and, at the same time, the richest of all the Buddhas. It has its own special treasure, which grows from year to year by the gifts of the faithful. Ingots of gold and silver, precious stones — rare works of art — without mentioning a certain number of objects, like a mahogany footstool, hideous alabaster vases of artificial flowers, and an old clock--probably all objects to which the owners attached great value, but which must really be quite surprised to find themselves now in such truly grand society . . . . .

In this vicinity is a graceful building carved like a reliquary, the library containing in its chests of delicately incrusted mother-of-pearl or lacquerwork invaluable manuscripts — the greater part of the sacred writings and legends of Buddha, with commentaries. Then there is the Vat Maha That, where are deposited the funeral urns of the kings, queens and princes of the blood, a building whose five-storied roof is surmounted by a golden spire. I will not enumerate the pagodas and pagodal buildings in the immediate vicinity of the royal palace. The greater part are all in one classical style. The pylon of masonry, completely covered with strange, grotesque forms, are applied decoration, either in faïence or in glass work. There are all sizes, from the enormous bell, whose spindle-shaped handle rises 60 to 100 feet high, down to the most simple ex-voto of the dimensions of a parlor ornament. It is an orgy of colors, a labyrinth of stairs and terraces, where shrubs and plants, gnarled and twisted after the Japanese fashion, grow in seemingly wild disorder. Here are reproduced, with considerable freedom and skill, a long series of frescoes of events in the life of Buddha. Under the colonnades, on each side of the avenue, are lines of gigantic grotesques, mostly in papier maché, covered with tinsel, representing heroes or gods. Here are monsters standing on their hind legs with extended paws; there are dragons with crystal eyes and gaping red mouth, all covered with glistening blue and red scales; in fact, a complete sacred menagerie.

Seen from a distance and in the morning sunlight, this stuff does not seem so bad, but it is absolutely essential for such an effect that one confine oneself to a general view of the whole, and that at a sufficiently remote distance. An examination near to at once reveals how inferior these flamboyant and oriental nightmares are to the Arabic art, which with equally fragile materials has succeeded in obtainiag most marvelous results and creating real chefs-d'œuvre.

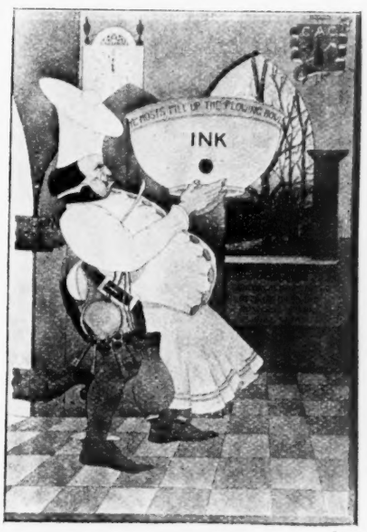
What is especially wanting in all this brilliant decoration is people — the coming and going of a crowd; priests in draped garments, chanting their litanies, the beating of gongs, and the tinkling of triangles should be the accompaniments to the scene; but, on the contrary, everywhere is solitude and silence; so deep, in fact, that one might almost believe oneself lost in a room devoted to plaster casts and ceramics in a provincial museum.

All this is kept in order at great expense, brilliant but desperately empty; and, for my own part, I greatly prefer the pagodas outside of the palace walls. Vat-Chenz, an immense pyramid, visible from all parts of the city, which rises from the midst of rubber trees and banyans, accessible to every one, enlivened by the little booths of peddlers, selling tea, perfumed candles, amulets, etc. Also another, whose name escapes me, where, in the shadows, like a crypt, is a reclining Buddha 150 feet long.

These monuments no one repairs; their color is scaling off, the revetment of brick and tile is falling away piece by piece, swallows build their nests in the holes in capitals and doorways, while the spiders spin their webs upon the august face of Buddha, and time has toned down the forms and colors to something approaching beauty . . . . In the suburbs, my pony trots along the deserted roadway, "The Circle," the only road existing in Bankok where a carriage can be driven; but no one is in sight, either on foot or on horseback. I hasten then to flee from this solitude and get back into the city before nightfall, when a strange silhouette of a castle rises from the midst of the rice fields, already heavy with fog. Where have I seen that before? It scarcely stands upright, but leans over at different angles so that the fantastic lines of the silhouette seem like the lines of a sketch by a child's unskilled hand, but it must be a copy. Oh, yes; I remember now, and I saw the model years ago, and far from here, between the blue sea and the white cliffs on the Austrian shore of the Adriatic. It is Miramar, but a wild, insane and totally ruined Miramar, in the midst of a marsh and without trees. Five or six years ago the "Master of the World," "His Excellency of the Holy Fest," "The Descendant of the Angels;" otherwise, his majesty, King Chalalongkorn, decided to build for the heir-apparent a palace upon the European model. Accordingly, he had prepared an album containing the photographs of some of the princely residences, among them Miramar. The surroundings pleased him; the architecture also suited his fancy. "Reproduce that!" he said to the architect, and the architect — I regret not to know his name — reproduced, goodness knows how, this home of Maximilian. The building has never been inhabited and is no longer habitable. The walls were too weak and actually broke. The roof had fallen, the windows are broken and the stairs rotted. The building cost several millions, and nothing is sadder than this entirely new ruin as it appears in the twilight, bringing up to mind at once the tragic memory of that short-lived emperor, and also the sad end of the young heir, who has but recently died.— *La Semaine du Batiment.*

*Translated and arranged for THE INLAND ARCHITECT by W. A. Otis.

THE CHICAGO ARCHITECTURAL CLUB.



IT was "Bohemian night" at the club, yet a distinct "business" air seemed to pervade. A number of architects, among them President Beaumont, of the Illinois Chapter of the American Institute, arrived, and a young man with a sharp-set face, broad, intellectual forehead, and the general air of decision and artistic temperament combined, absent-mindedly inspected the drawings upon the walls. These same walls were hung with green, and against this background were set posters of gorgeous hue and fantastic design. The authorship of these was mixed, for those by club members — proclaiming in all the colors in or out of the spectrum, that a Christmas "Bohemian night" would be held on December 23 — jostled shoulders, as it were, with some of the most naughty of the French school of theatrical cartoonists.

Upon the mantel was a box, upon the face of which was a poster in colors the subject of the above cut, from the center of which protruded a faucet. That box was full of hot claret punch. It did not remain full long. There was an exchange of fullness.

On the long table in the reading room were scattered corncob pipes, colored green, and decorated with ribbons of the same emerald hue, and soon everybody, from the youngest draftsman to the most distinguished guest (oh, no, not Mr. Beaumont, he don't smoke; but one of them, whose initials are P. B. Wight), was smoking. By the way, the club is not unpatriotic, but the tobacco in the jar was very like the Canadian T. & B. It may, however, know a good thing when it sees it. In the dining-room — well, perhaps those kegs were placed there to hang the posters on, or to form pedestals for the club plaster casts, but they were there, several of them, and there were stone mugs and "red hots" and sandwiches on the table.

Presently President Dean raised the huge maul, which, with its dice spot decoration, serves as the club gavel, rapped for order, and introduced Mr. George Beaumont, president of the Illinois Chapter of the American Institute of Architects, who had come to present the gold medal which is annually given by the Chapter to the club as a competitive prize among its members.

In a few words Mr. Beaumont sketched the history of the club, of which he was a charter member and one of its organizers, referring to the important work done in the twelve years of its existence, and incidentally regretting to find that the word "Sketch" had been dropped from the club title, and then called for Mr. Elmer C. Jensen, who had won the medal, to receive it from his hands.

A neat speech of acceptance from Mr. Jensen followed, and the president invited the company to inspect the club plaster casts. For it was Bohemian night, and even the presentation of a gold medal could but momentarily check the general enthusiasm. Around the dining table songs were sung and poems recited, even original poems. In one of the latter class the aspirations of the

young draftsman to architectural honors was caricatured as follows:

HIS FIRST JOB.

"'All things will come by waiting,'
Was proudly said, one time,
By a young and modest student
In the architectural line.

"He bought him the accoutrements
Pertaining to the art,
And rented modest offices
And sought to make a start.

"But while he sat and waited
For the job that never came,
The hair grew downy on his lip
And on his cheek the same.

"He wouldn't flirt with maidens,
Nor widows entertain;
But stuck to square and compasses
And cultivated Brain.

"And he was hopeful ever
That he would have a show,
And demonstrate to all the town
The Art he'd learned to Know.

"He'd been an humble architect
For fifteen years and more,
And still he waited for the job
That would bring him gold galore.

"It came; he worked with all his skill;
And showed in greatest glee
Perspective, plans and details—
For a three-seat W. C."

The tendency of the club members toward producing colored poster designs is, like the Bohemian-night custom, somewhat out of the regular line, but the posters show talent with the brush and imagination on the part of the authors, and the night of freedom and hilarity intervening that upon which the earnest work (and these young men are earnest and ambitious) establishes that spirit of comradeship which the French call *esprit du corps*, and which is the indescribable something which binds men together and keeps the spirit of emulation in its proper and most helpful channel.

The Chicago Architectural Club campaign of 1895 and 1896 opened with the annual meeting, on October 7, 1895, when Mr. George R. Dean was unanimously reëlected president. The club is fortunate in having Mr. Dean for its president, as its growth and activity of the past year testified. The other officers elected are as follows: First vice-president, R. E. Schmidt; second vice-president, Myron H. Hunt; secretary, Frank M. Garden; treasurer, Edward T. Wilder. Members of Executive Committee.—John Robert Dillon, Arthur G. Brown.

The regular classes were immediately started and are very well attended. They are four in number, namely: Architecture—George R. Dean, instructor; water color, Sunday A.M.—Hugh M. G. Garden, instructor; architectural modeling—Richard W. Bock, instructor; pen-and-ink rendering—Charles Eliot Birge, instructor.

A life class in drawing and sculpture has been started, and already shows the appreciation of the club members by a large attendance.

There is a meeting of the Club every Monday evening, the regular meetings occurring every two weeks, and are devoted to lectures on artistic and practical subjects belonging to architecture. Alternating with these are "Bohemian Nights," purely social in their nature. They are always a successful and popular feature.

The membership of the Club now consists of 115 active, 35 associate, and 13 honorary members, and there is every prospect of increased activity and usefulness.

The Ninth Annual Exhibition of the Club will be held at the Art Institute, Chicago, opening March 27, 1896. This exhibition will include architectural drawings and perspectives in all renderings, scale details of public and private work, projects, landscape drawings of parks and other public improvements, works of sculpture and artistic exhibits of works of the allied arts. Detailed information with circular of instructions and application blanks can be had by addressing Frank M. Garden, secretary Chicago Architectural Club, 274 Michigan avenue, Chicago.

CLEVELAND ARCHITECTURAL AND ART CLUBS.

A JOINT exhibition of the Cleveland Architectural Club and the Cleveland Art Club will be held in the Garfield building, opening February 10, 1896. Works will be received until Friday, January 31.

The exhibition will include: Architectural sketches, perspectives, and elevations in all renderings; photographs of executed work; landscape architecture; interior architecture; interior decoration; interior furnishings (samples and sketches); architectural and decorative metal work (wrought iron, bronze, and brass); sculpture (architectural and ornamental).

An illustrated catalogue will be issued, for which exhibitors are requested to send in drawings not later than January 20, 1896. Either photographs, line or wash drawings will be accepted; all subject to the approval of the catalogue committee. Catalogue to be 9½ by 12 inches; size of plates, 6 by 8 inches.

Further information may be had by addressing the secretary, Herbert B. Briggs, 1001 Garfield building, Cleveland, Ohio.

ENGINEERING ASSOCIATION OF THE SOUTH.

THE annual meeting for 1895 was held at the headquarters of the Association, at Nashville, Tennessee, on November 4, 1895, President Dudley in the chair. Present were: Messrs. H. McDonald, Blackie, Leftwich, Ruhm, Picton, Kirkpatrick, and Brown.

Messrs. Blackie and Brown were appointed tellers to canvass the ballots, and while this was in progress the secretary and treasurer presented their annual reports, which were accepted and ordered filed.

The Canvassing Committee then reported that the following were declared elected:

President — Mr. Hunter McDonald.
First Vice-President — Mr. W. G. Kirkpatrick.
Second Vice-President — Mr. J. J. Ormsbee.
Secretary — Lucius P. Brown.
Treasurer — Mr. W. M. Leftwich.
Directors for Tennessee — Maj. E. C. Lewis, Dr. W. L. Dudley, Mr. Herman D. Ruhm.
Director for Kentucky — Mr. John B. Atkinson.

On suggestion of the present secretary he was instructed to extend to the American Institute of Mining Engineers an invitation to hold their October meeting of 1896 in Nashville, and to tender them the use of our rooms.

The retiring president delivered his annual address on the subject "Development of Technical Education in the United States," of which a brief synopsis follows. He referred to the series of articles which had appeared in the *Engineering News*, giving valuable statistics on the subject, of which, he said, he had freely made use:

The first school in the United States to give a course of engineering was the United States Military Academy at West Point. The first two students who graduated as engineers graduated there in 1802. The military academy continued to graduate the only engineers in this country until 1840, when the Rensselaer Polytechnic Institute graduated its first class of thirteen civil engineers, being the first graduates in civil engineering in any English-speaking country. The Rensselaer Polytechnic Institute was founded in 1824 by Stephen Van Rensselaer as a "School of Theoretical and Applied Science." In 1849 it was reorganized as a general polytechnic institute, and it still devotes itself to civil engineering, dividing the course into general and sanitary engineering.

The total number of engineering schools or the schools giving engineering degrees, in 1889, was ninety-four.

Previous to 1802 engineers were self-taught, and from 1802 they were either trained in the office of some engineer or graduated at West Point.

Until recently in New England, and, at present in old England, "students" or pupils were apprenticed — so to speak — to practicing engineers. This custom, however, has never prevailed to any very great extent in the West. No articles were signed by the "pupil," but he was supposed to pay $100 per year for three years to the engineer in whose office he was serving, and he was paid 12½ cents per hour for his work in the field, which was credited on his tuition account. "After the war" this system began to die out, and the pupil was paid 12½ cents for his office work, as well as field work, and in this way he could frequently more than pay his tuition. This, however, did not cause any loss to his "instructor," because his services were charged at a rate of from $2 to $6 per day, according to the skill of the pupil. By this system the pupil learned much or little, as he chose. He asked such questions as he pleased, and got such answers as he could, but what he learned he usually learned well, because he put into practice immediately and constantly what he learned.

Up to 1830 the word engineer conveyed to the minds of the vast majority only the idea of a military officer. The phrase "civil engineer" had been but lately coined. In 1828 the Institution of Civil Engineers was incorporated in England, and when civilians assumed the title they incurred the wrath of the military men. In 1835 the Rensselaer Institute first resolved to form a distinct "Engineer Corps," receiving on graduation the "Rensselaer Degree of Civil Engineer." As we have seen, their first class graduated in 1840.

The School of Engineering of Union College, at Schenectady, New York, founded in 1845, was the second in the United States. The third was the Lawrence Scientific School at Harvard, founded in 1846. The fourth the Sheffield Scientific School at Yale, founded in 1847, nominally, but was not a live and active school until 1861. The fifth was the Engineering Department of the University of Michigan, founded in 1852. The sixth, the Brooklyn Polytechnic Institute, founded nominally in 1845, but did not begin graduating until 1866. The Columbia College School of Mines was founded in 1863 and opened in 1864. It was the first school in the United States in which mining was taught as a science. Here the college course in mining engineering started in the United States.

The Massachusetts Institute of Technology was incorporated in 1861 and began operations in 1865. In 1868 the first class, composed of thirteen, graduated.

The first degrees in mechanical engineering were conferred in 1868 by three institutions — Rensselaer conferring five, Yale one, and Massachusetts Institute of Technology one.

Stevens' Institute was founded in 1870; its electrical course was instituted in 1880. Sibley College, Cornell, was also founded in 1870. The first civil engineering degree was given in 1871. In

1875 the course in electrical engineering was instituted, as well as a course in marine engineering.

The latest course in engineering is chemical engineering, which is given at the Massachusetts Institute of Technology.

After thanks from the retiring president for the honor conferred upon him, and his expression of best wishes for, and interest in, the Association, and the passage of a vote of thanks to him for his excellent and instructive address, and to all the retiring officers for their zeal and faithful discharge of their duties, the Association adjourned.

ARCHITECTURAL LEAGUE COMPETITION FOR 1896.

THE committee for the Architectural League competition for 1896 announce the following conditions and programme: The problem is, "The Principal Entrance of a Terminal Railroad Station."

CONDITIONS.

First.—The competitors must be residents of the United States, and under the age of twenty-five.

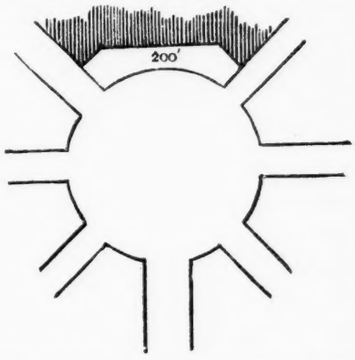
Second.—The drawings shall be made in conformity with the following programme, and entirely by the hands of the competitor.

The awards will be made by the Committee on Competition and Awards acting as a jury, and their decision will be rendered on or before February 13, 1896.

The competitive drawings will be hung at the exposition, the first and second prize drawings being so indicated, and these latter shall become the property of the League.

PROGRAMME.

The station is located at the junction of three main streets of a city of first importance, in a "rond point," the principal entrance facing one of them, and the station property being bordered by the continuation of the other two.



The line of the building is set well back from the street, giving ample space for driveways arranged so as to accentuate the entrance, steps, etc., for travelers arriving on foot. The main floor of vestibule must be located at about grade level. The length of front over all, as shown on diagram, is 200 feet. The cost is left to the discretion of the designer.

Only the entrance with preceding driveways, ramps, etc., with indication of main vestibule, shall be shown on plan and elevation.

The drawings will be placed on two sheets 26 by 39 inches; one sheet containing a section and elevation at ⅛ inch scale and plan at 1-16 inch, the other a ¾ inch scale detail, with cast and rendered shadows. All drawings are to be delivered flat, under a nom de plume, on or before February 6, 1896, at the League rooms; charges prepaid.

JOHN GALEN HOWARD,
ALBERT L. BROCKWAY,
THOMAS HASTINGS, Chairman.
Committee.

NEW PUBLICATIONS.

A TEXT-BOOK ON PLAIN LETTERING. By H. S. Jacoby, Associate Professor of Civil Engineering in Cornell University. Published by The Engineering News Publishing Company, New York. Price, $3.

Professor Jacoby has made a long and careful study of his subject, and has succeeded in producing a very useful book — in fact, the only book in existence dealing in a practical way not only with the forms of individual letters, but with the relation of the various letters to each other, their spacing, their arrangement in the form of captions or titles, and the choice of styles best suited for particular kinds of work.

AMERICAN STEAM AND HOT-WATER HEATING PRACTICE. From the *Engineering Record;* being a selected reprint of descriptive articles and questions and answers, with 535 illustrations; size, 8½ by 11 inches; 317 pages. Published by the *Engineering Record.* Price, $4.

As indicated in the title-page, this is a selected reprint of descriptive articles, questions and answers collated, for their especial interest, from the large amount of such articles which have appeared in the columns of the *Engineering Record* since 1888. In their descriptions they will be found to include expositions of heating and ventilating design applied to modern structures of the most extensive type, as well as a discussion of various problems arising in this department of building engineering. In the first 230 pages are illustrated and described examples of heating in all sorts of buildings, especially in those of the larger class. These examples are carefully classified, so that in looking for a method of heating any particular kind of building, it is only necessary to turn to the section comprising such structure, where examples will be found to choose from. The buildings are classed as follows: Apartment houses, churches, schools, theaters and amusement halls, public buildings, hospitals, railroad shops, hotels, office buildings, miscellaneous heating installations. The next general division of the book is entitled "Steam Heating Notes and Queries." These are correspondents' letters and answers, taken from the *Engineering Record*, and relate broadly to the subject of steam heating. A number are given on the proportioning of boilers, while on systems of piping there are thirteen articles, not including the one-pipe system, to which a separate section is devoted. Costs, methods, difficulties are each treated in numerous articles, while the miscellaneous section, which ends this department, deals with many topics of interest. Following the department of steam heating comes hot-water heating, which is similarly treated, and, finally, letters on ventilation and answers are classified and presented together.

OUR ILLUSTRATIONS.

Residence of Solon W. Stevens, Lowell, Massachusetts. Millard F. Davis, Harry C. Raynes, architects.

Calumet Clubhouse, Manchester, New Hampshire. William M. Butterfield, architect. Two views — exterior, interior.

New Lafayette Square Opera House, Washington, D. C. Wood & Lovell, architects, Chicago. Three views are given: exterior view in foyer, view in auditorium.

Chicago Architectural Club competition, "An Art School." Gold medal design, Addison B. Le Boutillier, of Boston, Massachusetts; silver medal design, William Leslie Welton, of Lynn, Massachusetts; bronze medal design, John F. Jackson, of Buffalo, New York.

Photogravure Plate: Residence of Dr. Coolidge, Chicago. Shepley, Rutan & Coolidge, architects.

PHOTOGRAVURE PLATES.

Issued only with the Photogravure Edition.

Residence, Evanston, Illinois.

Residence, Chicago. DeWitt T. Kennard, architect.

Residence of E. Foreman, Chicago. Charles S. Frost, architect.

Apartment house for Charles E. Rector. J. M. Van Osdel, architect.

Residence of John R. Hoxie, Chicago. George L. Harvey, architect.

Residence of A. O. Slaughter, Chicago. Holabird & Roche, architects.

Building of Black & Meyer and N. Coldwater & Brothers, Rochester, New York. Nolan, Nolan & Stern, architects.

F. W. Kirkpatrick, Chicago, was architect of the houses shown on plate in December number, entitled "Chicago Residences."

OBITUARY.

JOHN STEWARDSON.

The news of the death by drowning of architect John Stewardson, of the firm of Cope & Stewardson, of Philadelphia, will be received with the deepest regret. While skating on the Schuylkill river, January 6, Mr. Stewardson fell through the ice, and, like his brother Edward, who was drowned in a boating accident at Newport four years ago, his work suddenly ended while in the full and fresh vigor of his manhood. While but thirty-eight years of age, John Stewardson had already won a position among the foremost designers in the country. A student at Harvard, which he left before graduating to enter the Atelier Pascal and the Beaux Arts in Paris, a traveler and student of European architecture, he came home to apply his talents, which were many, and gain such reputation as those talents might win. He worked in the offices of Boston and was known to several in Chicago, from whence he went to take a position with Mr. Cope, whose partner he soon became. He may have been an American; he had the form and intellectual cast of features of a Scotchman. In character he was open and genial, loyal to his friends and deeply in love with his profession. His work, as he has left it, shows that his ideal was high, and his training had left no narrow lines, for he gave to his work a correct and scholarly feeling that marked the student and a more than ordinary talent. The dormitories for the University of Pennsylvania, designed by his firm, and many ecclesiastic and domestic structures contain the record of his achievement in his art, and all show a strength that gave great promise for the future. Among the younger architects in Philadelphia none could be more sincerely mourned. The melancholy circumstances surrounding his death (he leaves a mother and was to be married in a few days), make this the saddest of endings to what promised to be an exceptionally brilliant career.

ALFRED E. BEACH.

Alfred E. Beach, for fifty years editor of the *Scientific American*, died at his residence in New York, on January 1, 1896, of pneumonia. Mr. Beach was born in Springfield, Massachusetts, in 1826. He was the son of Moses Y. Beach, who established and conducted the *Sun* for many years. He was educated at Monson Academy, after which he entered his father's office, where he acquired a practical knowledge of newspaper work. In 1846 he and his former schoolmate, Orson D. Munn, founded the firm of Munn & Co., and became the proprietors of the *Scientific American*, which, at that time, was the only weekly journal of its kind published in this country. Mr. Beach, with his inherent taste for mechanics and all branches of science, was well adapted for the business he had chosen. His sympathy with inventors and men of genius rendered him very helpful to that class of people. He was a man of remarkable energy, and few excelled him in the conception of ideas for the furtherance of improvements in engineering and all mechanical arts. About 1852 he invented a typewriting machine, which was exhibited in operation at the Crystal Palace Exposition and at the American Institute Exhibition, in this city, from 1852 to 1855. Nearly thirty

years ago Mr. Beach devised a system of carrying letters by means of underground pneumatic tubes from the street lamp-posts directly to the central post office,and invented many devices to perfect it. This led to the organization of the Beach Pneumatic Transit Company, of which he was president. In 1867, at the American Institute Fair, in Fourteenth street, he had in operation, suspended from the ceiling, a section of pneumatic elevated railway in which many persons rode. The success of this experiment so convinced him of the value of pneumatic power for the propulsion of cars that he soon conceived the idea of constructing a tunnel under Broadway, and planned a system of underground railways for New York. In 1869, legislative authority having been granted, he constructed a section of underground railway extending from Warren street to Murray street. This work was executed, while traffic was going on overhead, by means of the Beach hydraulic shield, the first example of the machine which is now in common use by engineers in all parts of the world. The Beach hydraulic machine was used in the construction of the great railway tunnel under the St. Clair river at Port Huron, between the United States and Canada. The machine was also used for the underground railway tunnels in London, Glasgow, the Hudson River tunnel and similar works. Under the firm name of Munn & Co., Mr. Beach and Mr. Munn have been associated in business nearly fifty years, and many of the employes now attached to the office have grown gray in the service of the firm, one of the oldest in the city. Mr. Beach, soon after the close of the war, founded the Beach Institute, at Savannah, for the education of freed men, and he has always been known for his private charities. He leaves a widow, one daughter and a son, the latter being actively engaged upon the *Scientific American*, and known to amateur photographers throughout the world as director of the international exchange.

LEGAL NOTES.

MECHANIC'S LIEN FOR ADDITIONS, ALTERATIONS OR REPAIRS.

Since the passage of the act of 1836, relating to mechanic's liens, there has been a great change in the lien law for additions, alterations or repairs to any house or other building. By the act of 1861, the act of 1836 was extended, so as to give a lien for payment of debts contracted for work done or materials furnished for or about the repair, alteration of, or addition to, any house or building, in certain counties named. The operation of the latter statute, which is a supplement to and amendatory of the act of 1836, was extended to all the counties in the state by the act of May 18, 1887, which latter act provides that to entitle anyone to the benefits of the act, he shall give notice to the owner or reputed owner of the property, or his or her agent, at the time of furnishing the material or performing the work, of his intention to file a lien under said act. There is no question but that the act of 1887 places all repairs, alterations of, or additions to any house or building upon the same basis. The line is clearly defined, and there need be no uncertainty to the party or parties who may be entitled to such liens, to properly secure themselves for such materials furnished or work done. If it be for a new structure, the lien may be filed under the act of 1836. If it be for repairs, alterations of, or additions to, the lien may be filed under the act of 1887. Smyers *vs.* Beam, Supreme Court of Pennsylvania, 27 At. Rep., 884.

INTERPRETATION OF CONTRACTS.

Where a building contract provides that the contractor shall receive as compensation the cost of material and labor used in the building, "and ten per cent added thereto as profit," the accounts paid by the contractor on subcontracts for various portions of the work, including the customary profits of the subcontractors, will be considered as "the cost of labor and material," in estimating the amount due to the contractor. Hamilton *vs.* Coogan, Common Pleas of New York city and county, General Term, 28 N. Y. Supp. Rep. 21.

ACCEPTANCE BY ARCHITECT NOT CONCLUSIVE ON OWNER.

Where a building contract stipulates that the materials shall be of a certain quality, and that the work shall be performed in the best manner, subject to the acceptance or rejection of the architect, all to be done in strict accordance with the plans and specifications, and to be paid for when done completely and accepted, the acceptance by the architect of a different class of work or of different materials, will not bind the owner, as the provision for the acceptance by the architect is merely an additional safeguard for the benefit of the owner.— Lewis *vs.* Yagel, Supreme Court, General Term, Fourth Department, 28 N. Y. Supp., 833.

RIGHT OF ADJOINING LANDOWNER TO LATERAL SUPPORT.

The civil code of California in relation to support is as follows: "Each coterminous owner is entitled to the lateral and subjacent support which his land receives from the adjacent land, subject to the right of the owner of the adjacent land to make proper and usual excavations on the same for the purpose of construction, on using ordinary care and skill, and taking reasonable precautions to sustain the land of the other, and giving previous reasonable notice of his intention to make such excavations." The purpose of the notice required is to give the adjacent landowner an opportunity to protect his property from possible damage if he so desires. If he does not so desire, or is willing to assume the risk brought about by the threatened excavation, then, if damage to his property should follow, it would lie at his own door. But the owner of land has the right to excavate for building purposes, taking due precautions to sustain the adjacent land, and giving notice to the owner of his intentions, he cannot recover for money expended in sustaining the adjacent land. The notice required does not impose a duty upon the adjacent property owner, for the neglect of which a liability could be created in favor of the excavator. 28 Pac. Rep. 97, Supreme Court of California.

WHEN MATERIALS NOT USED ARE NOT SUBJECT TO MECHANIC'S LIEN.

Subcontractors who furnish materials specially designed and made for a building, and necessary for its completion are not entitled to a lien therefor where such materials were not used, because the contractor suspended work, or for other reason. Mechanic's Mill and Lumber Company *vs.* Deeny Hotel Company, of Seattle, Supreme Court of Washington, 34 Pac. Rep. 774.

BUILDING OUTLOOK.

OFFICE OF THE INLAND ARCHITECT,
CHICAGO, Ill., January 10, 1896.

There is more anxiety to arrive at a reasonable estimate of probabilities for 1896 than to read the most enlightened review of the year 1895. Figuratively speaking, every business man has his thumb on the button, to let on the current of 1896. The year 1895 will be remembered by many as a year of surprises, and far from as disappointing as was expected at the opening of the year. Business was, on the whole, satisfactory. Prices for the first few months were practically stationary. Many who made yearly contracts for building material had, later on, occasion to congratulate themselves for their foresight. The rumbling of the volcano of business was hardly suspected. Everybody knew that sooner or later there would be an upheaval; but the date of its coming was unknown. The sudden demand for iron and steel precipitated the upward movement. Other staple products shared in the advance to some extent; stocks advanced in value and a greater or less general trade expansion followed. The building trades early came in for their share. House building began early in the year, but cautiously in most cities. In the larger cities, as New York, Chicago, and one or two others, the work of erecting large structures for offices and general commercial purposes began early and was prosecuted with vigor throughout the year, all of these cities exceeding all previous records. In the smaller cities and large towns our reports exhibit, especially during the latter half of the year, a remarkable improvement over the latter half of 1894. Material, however, did not advance in value to any extent; manufacturers were anxious to get business; labor was generally content, and the later months of 1895 slipped along without much to mar. Building statistics, so far as gathered, exhibit some interesting features. Larger operations were entered upon, finer and more expensive buildings were erected. In many better material was used. Architects and engineers have both been giving more attention to scientific requirements in construction. Even in the poorer classes of dwellings there has been in many quarters a movement toward better work. It is to be regretted that this movement is not general. With some builders of cheap dwellings, material is used and flung together which has no place in house construction.

In general, investors and builders have been encouraged. Larger operations will be entered upon next year. This is the announced purpose in all of our larger cities. The advancing tendency in prices will rather encourage than discourage investments. The increasing employment of the masses, the generally good crops, the declining cost of living, the greater permanency of remunerative employment, all help to make prospects better for 1896; our foundations are strong, our course is well defined. Some errors need to be corrected and some dangers avoided. All our great industries are on a secure foundation; overproduction may again involve us in entanglements; the cornering of the nation's dollars may be again effected, but the dangers from such sources decline with each year and each month. Prices promise to be steady and fair, and the volume of business will probably expand with steady tread from month to month.

SYNOPSIS OF BUILDING NEWS.

Architects are invited to furnish for publication in this department monthly or occasional reports of their new work before the letting of contracts. Reports of buildings costing less than $5,000 are not published.

Chicago, Ill.— Architects Jenney & Mundie: For Adams & Westlake Company, at 85 to 93 Ohio street, a seven-story factory, 122 by 100 feet in size; to be of mill construction.

Architect Joseph C. Llewellyn: For W. H. Stewart, two two-story, basement and attic residences, 41 by 62 feet in size; to be erected at Sixtieth street and Lexington avenue; they will have buff Bedford stone fronts, hardwood interior finish, mantels and sideboards, the modern sanitary improvements, gas and electric fixtures, furnaces, etc. Same architect made drawings for a three-story factory, 70 by 120 feet in size; to be erected at St. Louis for the Fairbank Company; to be of common brick, mill construction, have flat roof, electric light, etc. Also made plans for a three-story flat building, 25 by 70 feet in size; to be built at Champlain avenue near Forty-ninth street; it will have a buff Bedford stone front, hardwood finish, mantels, gas and electric fixtures, etc.

Architects Pridmore & Stanhope: For E. A. Erickson, a two-story, basement and attic residence, to be built at West Pullman; it will be of pressed brick with buff Bedford stone trimmings and stone porch, have hardwood interior finish, mantels and sideboards, gas and electric fixtures, steam heating, etc.

Architects Murphy & Camp: For Mrs. Mary Huggard, a two-story, basement and attic residence, 34 by 50 feet in size; to be erected at Malden avenue near Wilson avenue, Ravenswood; it will be of pressed brick front with buff Bedford stone trimmings, have interior finished in hardwood, mantels, sideboards, gas and electric fixtures, steam heating, etc.

Architect J. L. Silsbee: Made plans for the electric light power house, 60 by 160 feet in size; to be erected in Garfield Park; it will be of stone and pressed brick, with tile roof, have steam heating, the necessary plumbing, etc.

Architect Albert S. Hecht: Making plans for a three-story flat building, 22 by 60 feet in size; to be built at Sheffield avenue, near Clark street; it will be of buff Bedford stone front, have interior finished in quarter-sawed oak, all open modern plumbing, gas fixtures, etc. For M. Sable, a two-story, basement and attic residence, 30 by 58 feet in size; to be erected at Roscoe boulevard,

near Elaine place; it will have a neatly designed front of buff Bedford stone and stone porch; the interior to be finished in quartered oak, have mantels and sideboards, all the modern sanitary improvements, gas and electric fixtures, etc. Also making plans for a two-story, attic and basement residence, 24 by 57 feet in size; to be built on Addison street; it will be of stone front, have hardwood interior finish, mantels and sideboards, gas and electric fixtures, electric bells, speaking tubes, laundry fixtures, hot-water heating. Same architect made plans for a three-story flat building, to be erected on Rokeby street, near Cornelia; it will have a front of buff Bedford stone, quarter-sawed oak finish, sideboards and mantels, gas and electric fixtures, furnaces, etc. For Peter Norwegen, at 195 Osgood street, a two-story flat, 22 by 51 feet in size; to have a pressed brick and stone front, oak finish, mantels, gas fixtures, furnaces. For Captain George Miller, a two-story and basement flat building, 22 by 50 feet in size; to be built at Grace street, near Seminary avenue; it will have a pressed brick and stone front, oak and pine interior finish, mantels and sideboards, gas fixtures, furnaces, etc.

Architects Furst & Rudolph: For E. Hobbs, a four-story and basement apartment house, 75 by 75 feet in size; to be erected at 3116 to 3120 Indiana avenue; it will be of pressed brick with stone trimmings, have hardwood interior finish, mantels and sideboards, the best of modern sanitary improvements, gas and electric fixtures, steam heating, etc. For L. Wolff Manufacturing Company, a five-story stable, 95 by 100 feet in size; to be erected at 735 Fulton street; to be of pressed brick and stone.

Architects Guenzel & Hibbard: For Mrs. Anna Dayton, a three-story flat building, 25 by 109 feet in size; to be erected at 230 Hampden court; it will have a front of red and brown pressed brick with brown brick trimmings, stone sills and caps, glazed tile mansard roof, the interior to be finished in hardwood and have mantels and sideboards, gas and electric fixtures, all modern open plumbing, electric light, etc.

Architect S. N. Crowen: Made plans for two two-story and basement flats, 48 by 65 feet in size; to be erected at Winchester avenue, near Ogden avenue; to be of pressed brick, stone front, have hardwood finish, mantels and sideboards, gas fixtures, etc.

Architect A. Sandegren: For M. G. Leonard, six two-story, basement and attic residences, to be erected at Washington Park place and Forty-ninth street; they will all have handsome stone fronts, hardwood interior finish, mantels and sideboards, gas and electric fixtures, gas ranges and fireplaces, electric light, steam heating, etc. One will cost $12,000, two $16,000, and three $21,000. For T. M. Powers he is making plans for a three-story and basement apartment building, 50 by 65 feet in size; to be erected at Jackson boulevard, near Robey street; it will have a buff Bedford stone front hardwood interior finish, mantels and sideboards, gas and electric fixtures, all open nickel-plated plumbing, electric light, steam heating. For F. E. Kochler, a handsome two-story residence, to be erected on Langley avenue; it will have a stone front, hardwood finish, and all the modern improvements.

Architect Dwight H. Perkins: For J. A. Miller, a six-story and basement warehouse, 44 by 178 feet in size; to be erected at 71 to 73 West Adams street; it will be of pressed brick and stone front, mill construction, have elevators, electric light, steam heating, etc.

Architect C. M. Palmer: For D. Rosenheimer, three two-story, basement and attic residences, 60 by 62 feet in size; to be erected at Forty-ninth street and Vincennes avenue; they will have handsome buff Bedford stone fronts, hardwood interior finish, mantels and sideboards, gas and electric fixtures, etc. For Potter Palmer, three three-story and basement residences, and one four-story residence; to be erected at 135 to 141 Cedar street; they will have stone fronts, all hardwood finish throughout, the best of sanitary improvements, gas and electric fixtures, special mantels, sideboards and consoles, electric light, steam heating, gas ranges and fireplaces. Also preparing drawings for three two-story basement and attic residences; to have a frontage of 60 feet; to be erected on Forty-sixth street; they will have blue Bedford stone fronts, hardwood interior finish, mantels and sideboards, gas and electric fixtures, steam heating, etc. For C. C. Landt, three two-story, basement and attic residences, 50 feet frontage and 66 feet deep; to be erected at Sixtieth street; they will have stone fronts, hardwood interior finish, mantels, sideboards, gas and electric fixtures, hot-water heating, etc. For J. Boydell & Sons, three two-story residences, 50 feet front and 66 feet deep; to be erected at Forty-fifth place near Grand boulevard; they will have Bedford stone fronts, hardwood interior finish, mantels and sideboards, gas and electric fixtures, gas ranges and fireplaces, steam heating, etc.

Architects Lamson & Eichberg: For James F. Smith, a two-story and basement flat building, 25 by 68 feet in size; to be erected at 1614 Adams street; Bedford stone front, hardwood finish, mantels and sideboards, gas fixtures, furnaces, etc. Also making plans for a three-story and basement apartment house, 25 by 80 feet in size; to be erected at Paulina street near Twelfth street; the front will be of pressed brick with buff Bedford stone trimmings, the interior will be finished in quarter-sawed oak, and have mantels and sideboards, gas and electric fixtures, furnaces, etc. For William H. Riddiford, a three-story flat building, at 1056 Washington boulevard; to have a stone front, hardwood finish, mantels and sideboards, gas and electric fixtures, furnaces.

Architects Gatterdam & Krieg: For Nicholas Hartmann, a three-story, store and flat building, 22 by 50 feet in size; to be built at 2191 Madison street; it will be of buff Bedford stone front, have oak finish, mantels and sideboards, gas fixtures, electric bells, speaking tubes, furnaces. For Gustav Krug, a three-story and basement, store and flat building, 48 by 56 feet; at Twelfth street near Ashland avenue; hardwood interior finish, mantels and sideboards, gas fixtures, etc.

Architect Frederich Foehringer: For Rudolph Klehman, a three-story and basement store and flat building, 30 by 65 feet; to be erected at Willow street near Vine street; it will be of pressed brick and stone front, have Portage red sandstone trimmings, copper bay windows and cornices, Georgia pine interior finish, mantels and sideboards, gas fixtures.

Architect F. B. Abbott: For George J. Kuebler, a two-story and basement residence, 25 by 50 feet in size; to be erected at Fiftieth street near Grand boulevard; it will have a buff Bedford stone front, oak interior finish, mantels, and sideboards, gas and electric fixtures, laundry fixtures, electric bells, speaking tubes, furnace. For A. D. F. Gardiner, a two-story, basement and attic frame residence, 26 by 47 feet in size; to be built at Rogers Park; it will have a stone basement, hardwood finish, mantels, gas fixtures, etc.

Architect R. B. Hotchkins: For J. M. Haskett, a three story and basement apartment house, 46 by 118 feet in size; to be erected at Fifty-fifth street boulevard and Ross avenue; it will have a handsome buff Bedford cut stone front on the boulevard, and pressed brick with Bedford stone trimmings on the other street; it will be finished in oak throughout, have mantels and sideboards, tile, marble and mosaic work, gas and electric fixtures, steam heating, etc.; the cost will be about $40,000.

Architects Cowles & Ohrenstein: For Eurich R. Steele, a three-story and basement flat building, 32 by 68 feet in size; to be erected at Bunker street near Humboldt Park; the front will be of pressed brick with stone trimmings, galvanized iron bay windows, slate roof, the sanitary improvements, electric bells, speaking tubes, steam heating, etc. For J. Wesley Brown, a three-story flat building, 25 by 75 feet in size; to be erected at Forty-ninth street and Calumet avenue; to be of stone and terra cotta front, have hardwood finish, mantels and sideboards, gas fixtures, laundry fixtures, steam heating, etc.

Architect Niels Buck: Made plans for the Sheridan apartment building, 40 feet front and 75 feet deep; to be erected at the Sheridan Drive facing Lincoln Park; it will have a handsome buff Bedford stone front, hardwood interior finish, mantels and sideboards, gas and electric fixtures, electric light, electric bells and speaking tubes, etc. Also making plans for a three-story apartment building, 58 feet front; to be erected at the corner of Perry street and Belleplaine avenue; the front will be of buff Bedford stone, the interior to be finished in quarter-sawed oak, and have mantels, sideboards, gas and electric fixtures, laundry fixtures, furnaces.

Architect C. A. Strandel: For C. Valentine, a three-story flat building, 28 by 82 feet in size; to be erected at Prairie avenue between Sixtieth and Sixty-first streets. It will have a buff Bedford stone front hardwood interior finish, mantels and sideboards gas fixtures electric bells, etc. For O. Berger, a three-story store and flat building, 33 by 80 feet in size; to be erected at Seventy-fifth street. It will have a pressed brick and stone front, hardwood interior finish, mantels, gas fixtures, etc. For M. Sandeberg, four stores, 75 by 80 feet in size; to be built at Belmont avenue near Baxter street, iron and glass water closets, sinks, gas fixtures.

Architects Brompton & Lawson: For S. E. Gross, a three-story building, 44 by 90 feet in size, to be erected at West Grossdale. It will contain stores flats, offices and theater. It will be constructed of boulders up to the second story sill course, and the rest will be of pebble dashed cement. Also for S. E. Gross, thirty-two two-story and basement houses, about 25 by 40 feet each; to be erected at West Grossdale. They will be of frame construction on brick basements, have the modern sanitary improvements, gas fixtures, furnaces, etc.

Architects J. F. & J. P. Doerr: For Hart & Frank, five three-story residences, to be erected at Forty-fourth street and Grand boulevard. They will have stone fronts, hardwood interior, mantels and sideboards, gas and electric fixtures, steam heating.

Architects Treat & Foltz: For E. E. Chandler, a three-story residence, 33 by 63 feet in size, to be erected at 5130 Lexington avenue. It will be of pressed brick and stone front, have hardwood interior finish, mantels and sideboards, the best of open nickel-plated plumbing hot-water heating, etc.

Architects Dwen & White: For J. Woodhouse, a two-story, basement and attic residence, 26 by 51 feet in size; to be erected at Ellis avenue and Fiftieth street. It will be of pressed brick and stone front, have hardwood interior finish, mantels and sideboards, gas fixtures furnace etc.

Architect Howard Van Doren Shaw: For Henry Collner, a three-story and basement flat building, 24 by 96 feet in size; to be erected at Center avenue near Taylor street. It will be of stone front, have finished basement, oak and Georgia pine finish mantels and sideboards, open sanitary plumbing, gas fixtures, steam heating, etc. For M. D. Wells, a three-story stable 80 by 80 feet in size; to be erected at Salisbury, Connecticut; it will be of stone and frame, have plumbing, etc.

Architect Louis Martens: For Messrs. Halley & Clark, a four-story and basement apartment building, 50 feet front and 82 feet deep; to be erected at Lake avenue and Forty-third street; the first story will be of buff Bedford stone and the rest of pressed brick with terra cotta trimmings; the interior will be finished in quarter-sawed oak and have mantels, sideboards and consoles, all open modern plumbing, gas and electric fixtures, steam heating, etc. For James S. Eldridge, a four-story apartment building, 25 by 125 feet in size; to be erected at the corner of Thirty-second street and Forest avenue; it will be of pressed brick and stone with first story of Bedford stone, have all hardwood finish, the modern plumbing, mantels and sideboards, gas fixtures, electric light, etc.

Architects Handy & Cady: For J. L. Cochrane, a handsome two-story and basement residence, 29 by 67 feet in size; to be erected at Edgewater; it will be of pressed brick for the first story and frame above, have hardwood interior finish, mantels and sideboards, gas and electric fixtures, heating, etc. For Dr. E. J. Kuh, a three-story residence, 25 by 90 feet in size; to be erected at Drexel boulevard near Forty-third street; it will be of pressed brick with stone trimmings, in the Colonial style of architecture; the interior will be finished in quarter-sawed oak, have mantels, sideboards and consoles, the best of modern sanitary improvements, gas and electric fixtures, laundry fixtures, electric bells and speaking tubes, electric light, hot-water heating.

Cleveland, Ohio.—Architects Coburn, Barnum & Benes, 40 Blackstone building: Have prepared plans for the remodeling of a block on Euclid avenue, fitting it up for a modern store and office building for the W. B. Davis Company. For the Hollenden Hotel Company they are preparing plans for still further additions to that hotel; fireproof construction, plumbing, electric lighting, elevators.

Architect Alfred Hoyt Granger, 731 Garfield building, reports: A $25,000 pressed brick and brownstone residence, for Mr. Luther Allen; to be erected on Euclid avenue opposite Morse avenue; it will be three stories high, in the Italian style of architecture, with a tile roof, hardwood finish, first floor, hardwood floors throughout, steam heat, plumbing, tile bathrooms, mantels and grates.

Architect W. W. Sabin, 33 Blackstone building, has prepared plans and let contracts for a modern frame residence, to be built in Akron, Ohio.

Architect A. A. French, 801 Cuyahoga building, has plans for a four-story brick and stone store and apartment block, 100 by 135 feet in size; to be built at the corner of Willson avenue and Lena street, for Mr. J. H. Champ; steam heat, plumbing; cost $40,000.

Architects Gregg & La Chance, 614 and 615 Permanent building, have plans for a three-story brick apartment house, for Mr. C. Zellers; to be built at the corner of Woodland and Woodland avenues; stores below and apartments above; steam heat, twenty-two bathrooms; cost $25,000. For Mr. E. Heyse they have a three-story apartment house similar to the above, to be on Franklin avenue; cost $25,000. At the corner of Central and Brooker avenues they have a two-story brick and stone store building; cost $6,800. For Malcomb Campbell they have a modern frame residence; to be built on Detroit street, corner of Hillsdale avenue; cost $5,000.

Detroit, Mich.—Architects Mason & Rice: For Hammond, Standish & Co., a two-story meat market, under way; cost $10,000.

Architect Edw. C. Van Leyen: For George A. Van Derbeck, a grand stand at baseball park, 40 by 175 feet in size; projected; cost $7,000. For William C. Metcalf, a two-and-one-half-story brick and stone residence; projected; cost $8,000.

Architects Spier & Rohns: For Windsor Street Railway Company, two-story brick station house and office building, 45 by 50 feet in size; projected; cost $6,000.

Architects A. C. Varney & Co.: For D. J. Campan, four-story brick store, 57 by 67 feet in size; under way; cost $15,000.

Architect J. E. Mills: For self, three-story brick and stone residence; projected; cost $6,500.

Architects Stratton & Baldwin: For Sanitarium Syndicate, three-story brick sanitarium, 50 by 200 feet in size; projected; cost $50,000.

Duluth, Minn.—Architects German & De Waard: For D. T. Adams, a flat building, 70 by 90 feet in size; will be of pressed and common brick and brownstone, have steam heat, hardwood finish, mantels and electric fixtures; cost $30,000.

Harrisonville, Ind.—Architect W. C. Root, Kansas City, Missouri: For Board of Supervisors, Cass county, courthouse, of pressed brick and stone, 80 by 90 feet in size.

Indianapolis, Ind.—Architect W. S. Staples: Store and office building, 40 by 140 feet in size; four stories, of brick; steam heating, gas and electric lighting.

La Fayette, Ind.—Architect Frank H. Wolever: For Highland Park Land Company, residence, of stone, frame and pressed brick, 65 by 80 feet in size.

Pittsburg, Pa.—Architects George S. Orth & Brother: A two-story brick residence; A. and S. Wilson, contractors; heating, mantels, tiling, chandeliers, and art glass reserved; cost $16,000.

Architects Peabody & Stearns, Boston, Massachusetts: For Durbin Horne, residence; to be of brick; cost $45,000; steam heat.

Rochester, N. Y.—Architects Fay & Dryer: For the Proctor estate, a four-story manufacturing building, of brick and mill construction; for R. D. Richards, residence.

Architect Charles F. Crandall: For Knowlton & Beach, a five-story manufacturing building; fronts of pressed brick, slow burning construction, fan system of heating and ventilation.

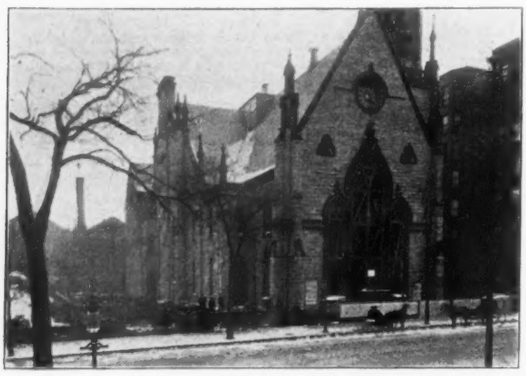
Architects A. J. Warner & Co.: A country residence and stables; cost about $40,000. Also have plans for a five-story building for Taylor Brothers; material: buff pressed brick. For a brick repair shop for Rochester Street Railway Company, two stories, 68 by 19 feet in size.

Rock Island, Ill.—Architects Drack & Kems: Congregational church, of pressed brick and stone, 52 by 100 feet in size; cost $18,000.

Rushville, Ind.—Architect A. W. Rush & Son, Grand Rapids, Michigan: Courthouse, of brick and stone, 120 by 150 feet in size; cost $160,000.

St. Louis, Mo.—Architect L. C. Bulkley: For E. E. Paramors, residence, of pressed brick and stone; cost $16,000.

REMARKABLE FEAT IN MOVING ENGINEERING.



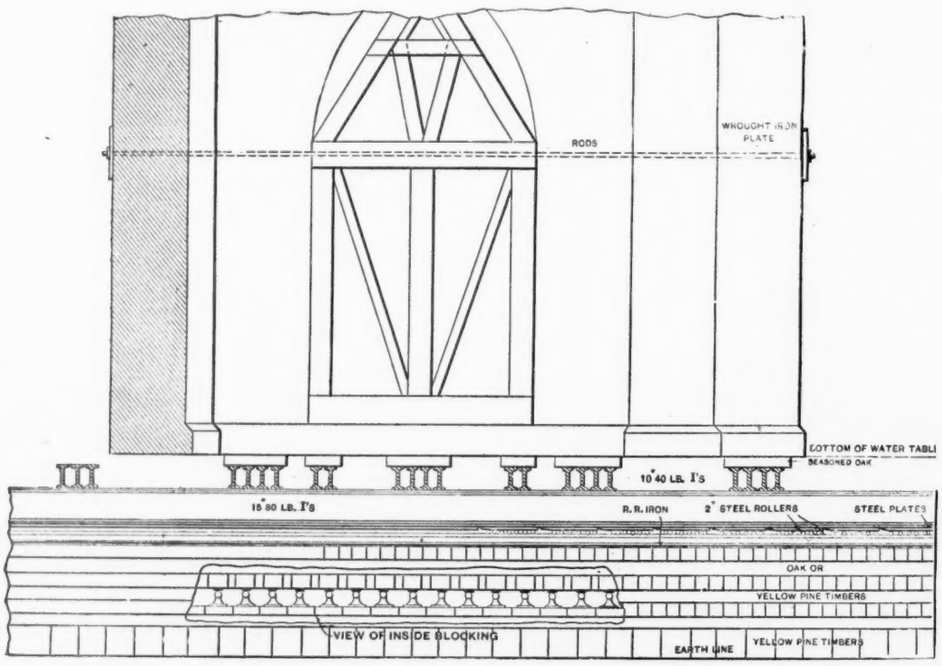
IMMANUEL BAPTIST CHURCH,
Showing front bracing, and ready to be moved.

PROBABLY the greatest feat in the line of moving a large building from one site to another that has ever been attempted in this or any other country has just been successfully accomplished in Chicago. The problem involved was one that called for the most careful calculation of weights, the finest adjustment of proportions and the thorough knowledge of each part to be performed, as a defect in one would bring disaster. The Immanuel Baptist church was designed and built by Architect Cass Chapman, of Chicago, in 1869. It was constructed of limestone, covers 93 by 161 feet, is over one hundred feet to the top of gables. The tower is 24 feet square at base and is 225 feet high. The tower was estimated to weigh 1,432 tons and the entire structure 6,652 tons. Besides this enormous tower the auditorium spanned 93 feet, and altogether the problem presented was so enormous as to be unique in the history of raising and unparalleled in that of the removal of structures.

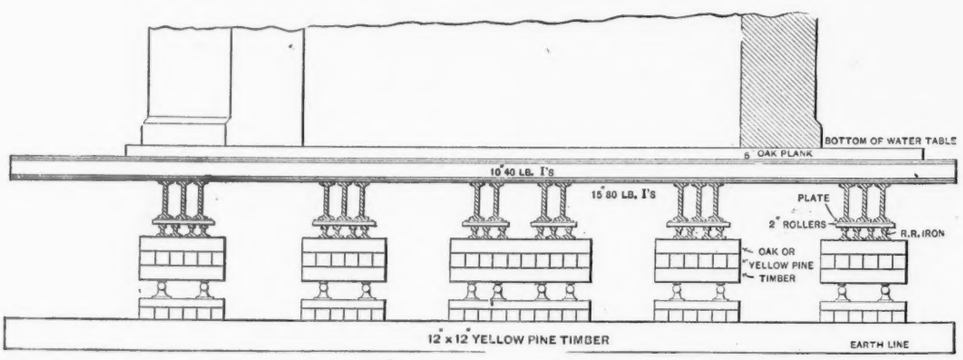
It was through the demand for the corner upon which the church stood for hotel purposes that it was decided to move the church fifty-one feet and raise it five feet six inches. The story, as told by Mr. Rector, the superintendent in charge for the house moving and raising firm of H. Sheeler, 83 Washington street, Chicago, is interesting, and with the accompanying drawings will illustrate how the work was accomplished.

It might be here mentioned that it was not possible to procure a photograph showing the church because of the proximity of adjacent buildings, and the illustration has been carefully drawn by F. L. Lively for this purpose.

The new site was first carefully tested for bearing strength as in the case of foundations for new structures. This and the intervening space was first covered by a layer of 12 by 12 timbers for a track bed with a bearing capacity of 2,300 pounds to the square foot. Upon these timbers the blocks supporting the screws were laid and on these timbers supporting the track for the rollers. This was composed of 60-pound steel rails, involving the use of 135 tons of this material. The rollers were of tempered steel two inches in diameter and twenty-five inches long and tempered to the same degree as the rails. Above the rollers were steel "linings" or shoes forged in sheets from bessemer steel and bedded in the beams above with car wheel paper in order that all inequalities might be removed. Each of these linings carried six rollers and were directly under the main supporting beams of the structure. The diagram which is supplemented shows clearly this intricate piece of engineering and, as words cannot, how necessary it was that each weight and factor should be carefully computed,



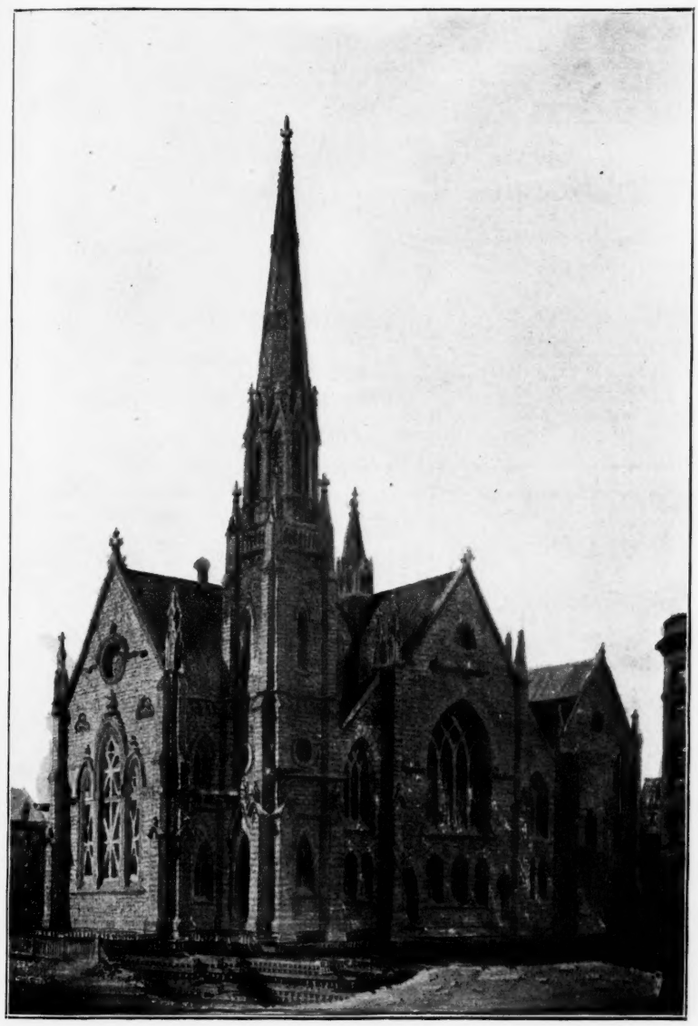
FRONT VIEW OF TOWER LOADING AND ENTRANCE BRACING.



PLAN VIEW OF TOWER LOADING, SHOWING ARRANGEMENT OF TRACK, SCREWS, ETC.

and how a single failure in this respect would be disastrous. The main beams supporting the building were composed of three steel beams, 15-inch, 80 pounds, laid side by side, and the loading beams were 10-inch, 40 pounds, and distributed as seen in diagram.

The number of screws used was enormous, for besides 1,100 common or 5-ton screws, those for the tower, 150 in number, were made of steel and each lifted 36 tons. In fact, even the rollers had to be made special, as smooth shafting would not have had the required friction and each had to be made to the corresponding temper of the linings and rails. After the tracks were laid and rollers placed, the moving power was secured by fastening a chain to the immovable foundation timbers and by it anchoring a base, against which screws could act and by turning them push the building. Of no less importance was the work of bracing the building. Immense rods were placed through from side to side. The large front windows were braced with timbers to support the gable and every precaution taken to make the walls secure, and after the work was finished a careful inspection failed to reveal a single crack. The work was commenced on October 14, and completed, after being raised five feet six inches, on November 27, ready for the masons to put in the foundations and the removal of



IMMANUEL BAPTIST CHURCH,
Showing position on blocks after moving and before raising.

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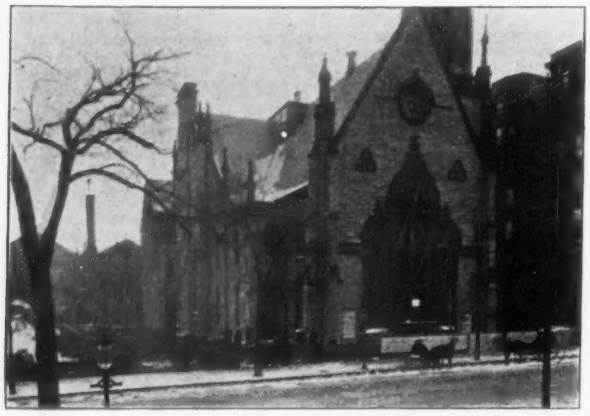
REMARKABLE FEAT IN MOVING ENGINEERING.



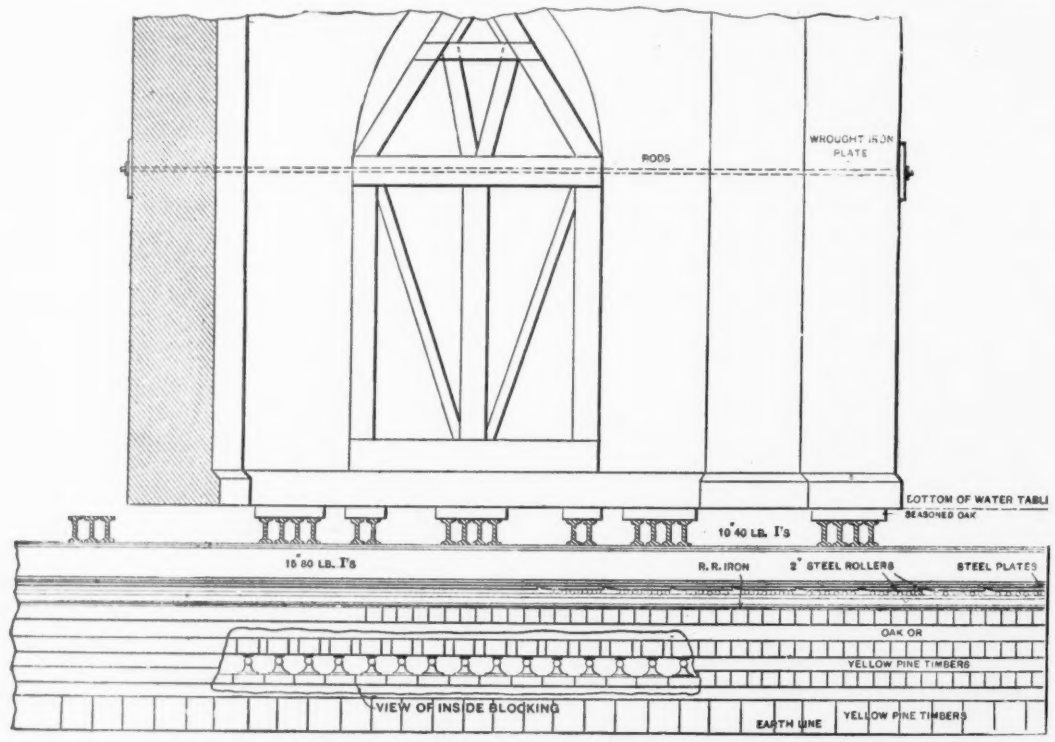
IMMANUEL BAPTIST CHURCH,
Showing front bracing, and ready to be moved.

PROBABLY the greatest feat in the line of moving a large building from one site to another that has ever been attempted in this or any other country has just been successfully accomplished in Chicago. The problem involved was one that called for the most careful calculation of weights, the finest adjustment of proportions and the thorough knowledge of each part to be performed, as a defect in one would bring disaster. The Immanuel Baptist church was designed and built by Architect Cass Chapman, of Chicago, in 1869. It was constructed of limestone, covers 93 by 161 feet, is over one hundred feet to the top of gables. The tower is 24 feet square at base and is 225 feet high. The tower was estimated to weigh 1,432 tons and the entire structure 6,652 tons. Besides this enormous tower the auditorium spanned 93 feet, and altogether the problem presented was so enormous as to be unique in the history of raising and unparalleled in that of the removal of structures.

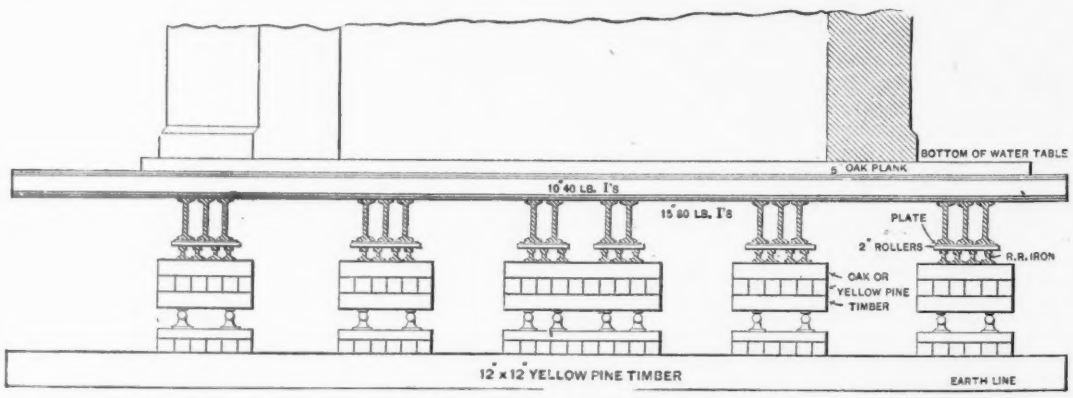
It was through the demand for the corner upon which the church stood for hotel purposes that it was decided to move the church fifty-one feet and raise it five feet six inches. The story, as told by Mr. Rector, the superintendent in charge for the house moving and raising firm of H. Sheeler, 83 Washington street, Chicago, is interesting, and with the accompanying drawings will illustrate how the work was accomplished.

It might be here mentioned that it was not possible to procure a photograph showing the church because of the proximity of adjacent buildings, and the illustration has been carefully drawn by F. L. Lively for this purpose.

The new site was first carefully tested for bearing strength as in the case of foundations for new structures. This and the intervening space was first covered by a layer of 12 by 12 timbers for a track bed with a bearing capacity of 2,300 pounds to the square foot. Upon these timbers the blocks supporting the screws were laid and on these timbers supporting the track for the rollers. This was composed of 60-pound steel rails, involving the use of 135 tons of this material. The rollers were of tempered steel two inches in diameter and twenty-five inches long and tempered to the same degree as the rails. Above the rollers were steel "linings" or shoes forged in sheets from bessemer steel and bedded in the beams above with car wheel paper in order that all inequalities might be removed. Each of these linings carried six rollers and were directly under the main supporting beams of the structure. The diagram which is supplemented shows clearly this intricate piece of engineering and, as words cannot, how necessary it was that each weight and factor should be carefully computed,



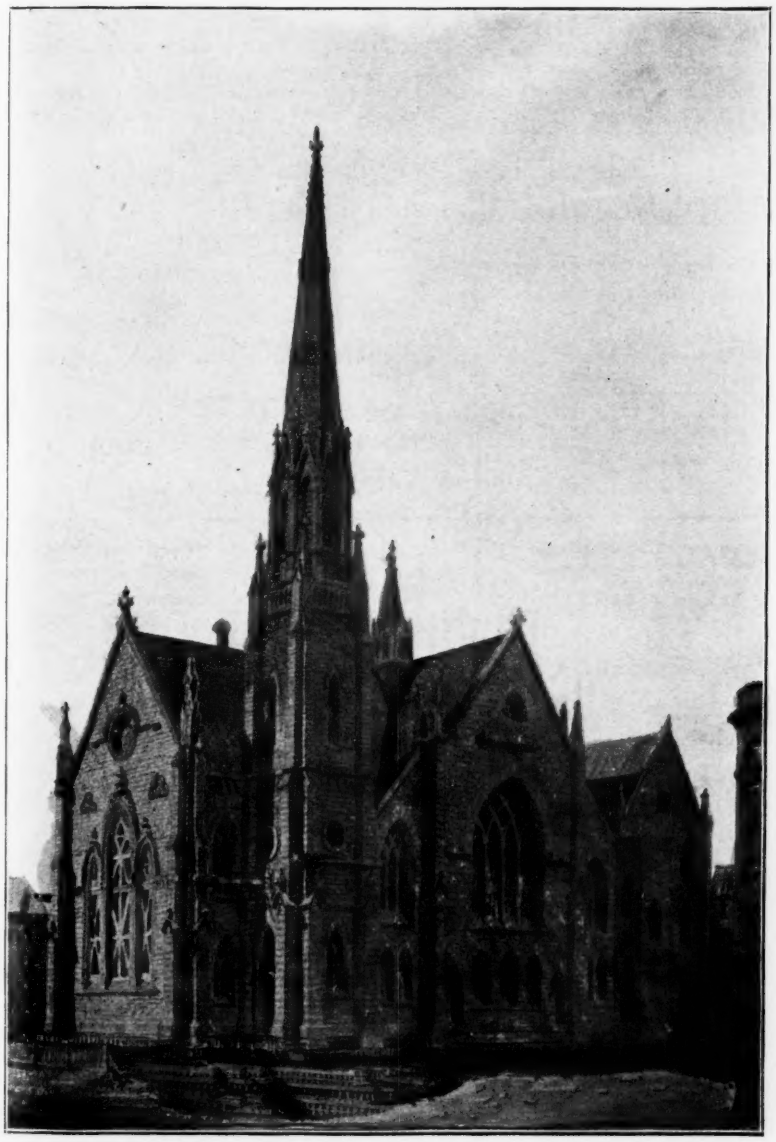
FRONT VIEW OF TOWER LOADING AND ENTRANCE BRACING.



PLAN VIEW OF TOWER LOADING, SHOWING ARRANGEMENT OF TRACK, SCREWS, ETC.

and how a single failure in this respect would be disastrous. The main beams supporting the building were composed of three steel beams, 15-inch, 80 pounds, laid side by side, and the loading beams were 10-inch, 40 pounds, and distributed as seen in diagram.

The number of screws used was enormous, for besides 1,100 common or 5-ton screws, those for the tower, 150 in number, were made of steel and each lifted 36 tons. In fact, even the rollers had to be made special, as smooth shafting would not have had the required friction and each had to be made to the corresponding temper of the linings and rails. After the tracks were laid and rollers placed, the moving power was secured by fastening a chain to the immovable foundation timbers and by it anchoring a base, against which screws could act and by turning them push the building. Of no less importance was the work of bracing the building. Immense rods were placed through from side to side. The large front windows were braced with timbers to support the gable and every precaution taken to make the walls secure, and after the work was finished a careful inspection failed to reveal a single crack. The work was commenced on October 14, and completed, after being raised five feet six inches, on November 27, ready for the masons to put in the foundations and the removal of



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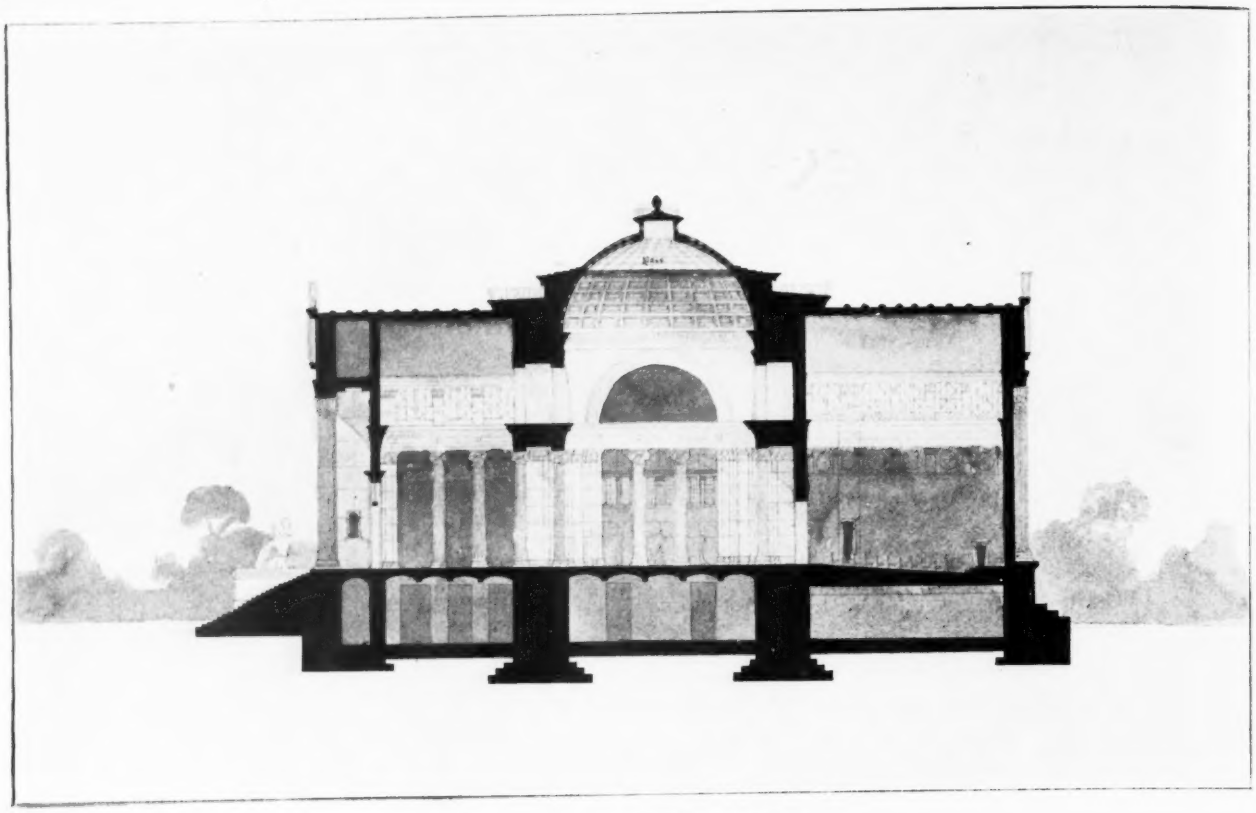

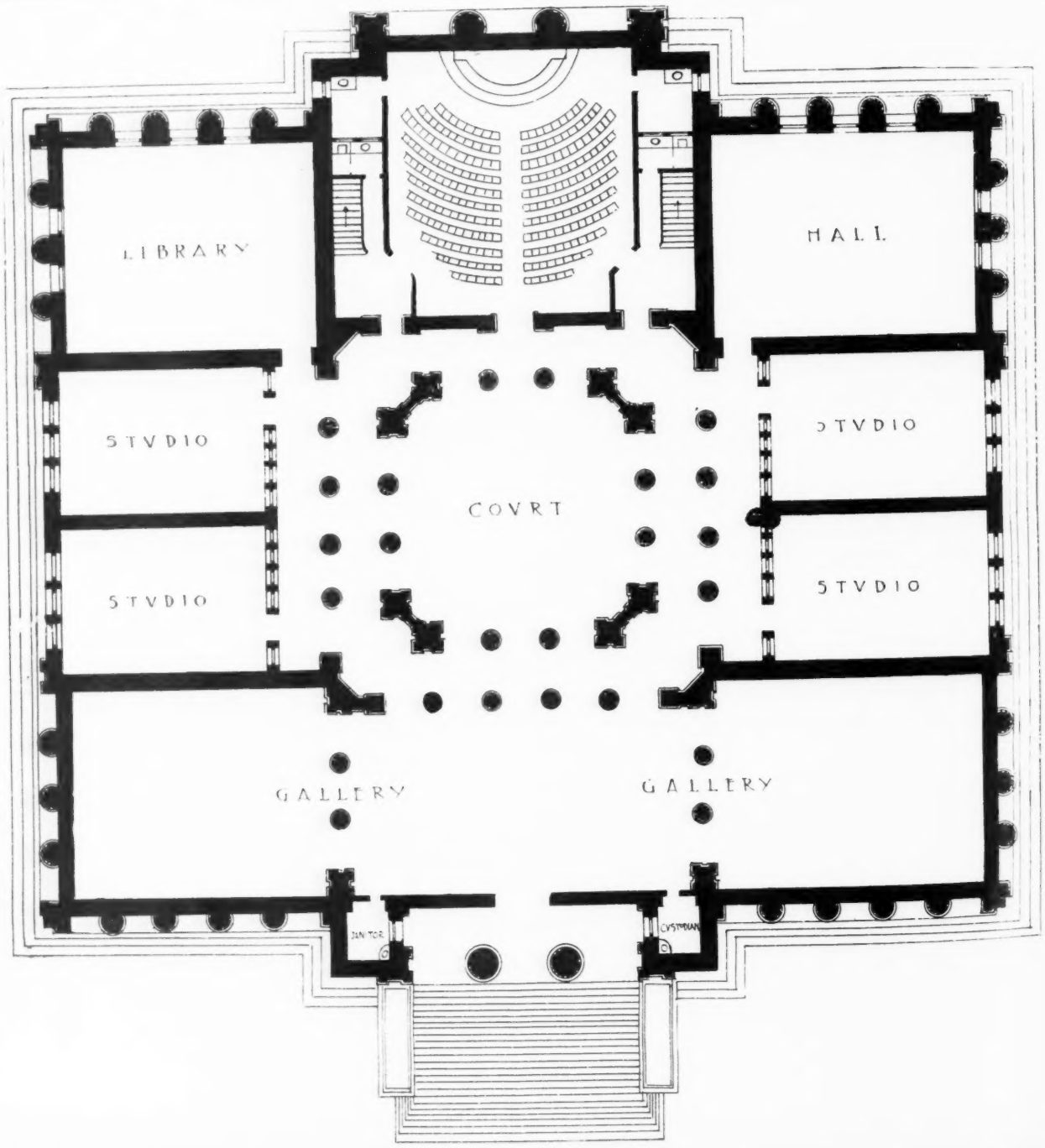
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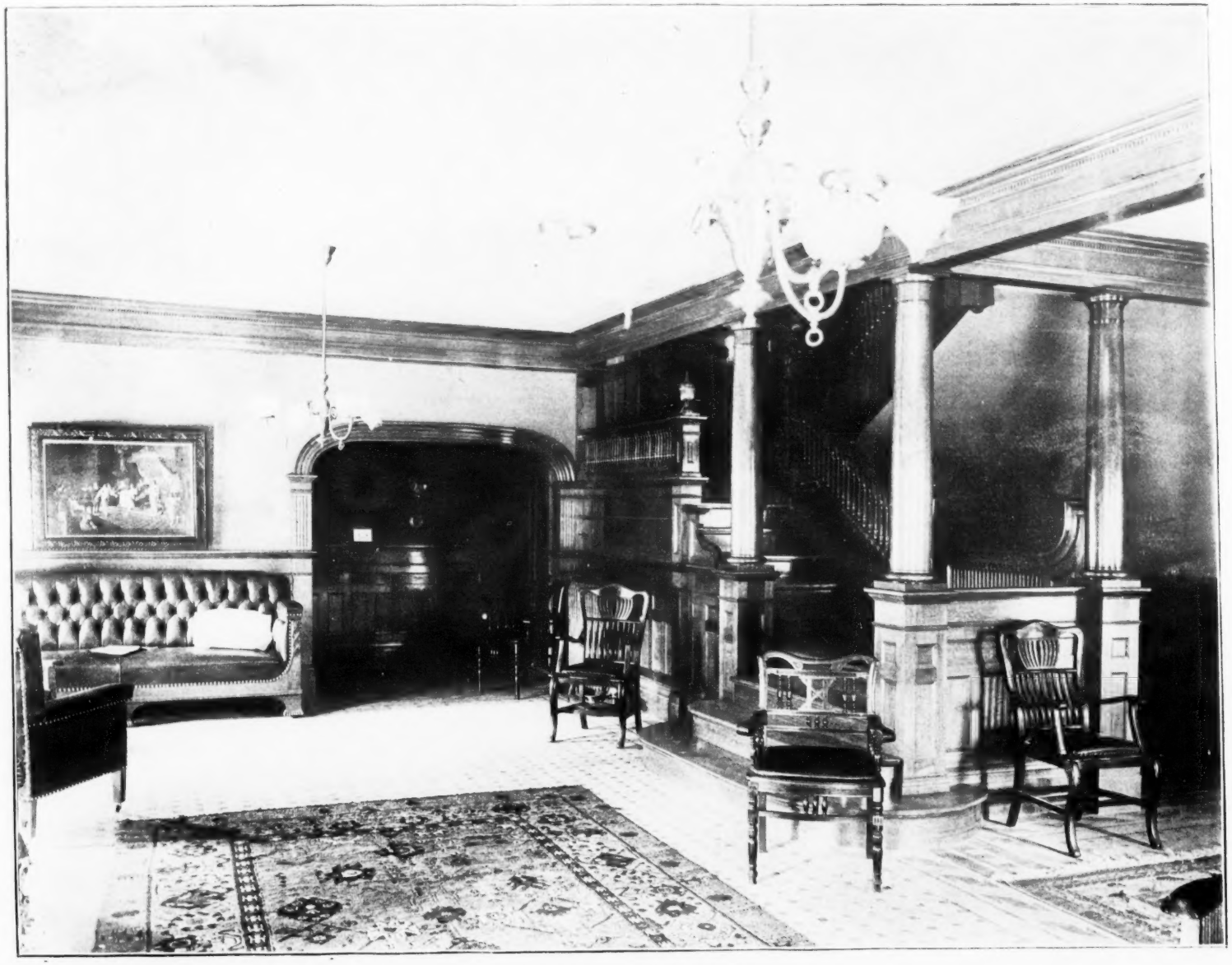
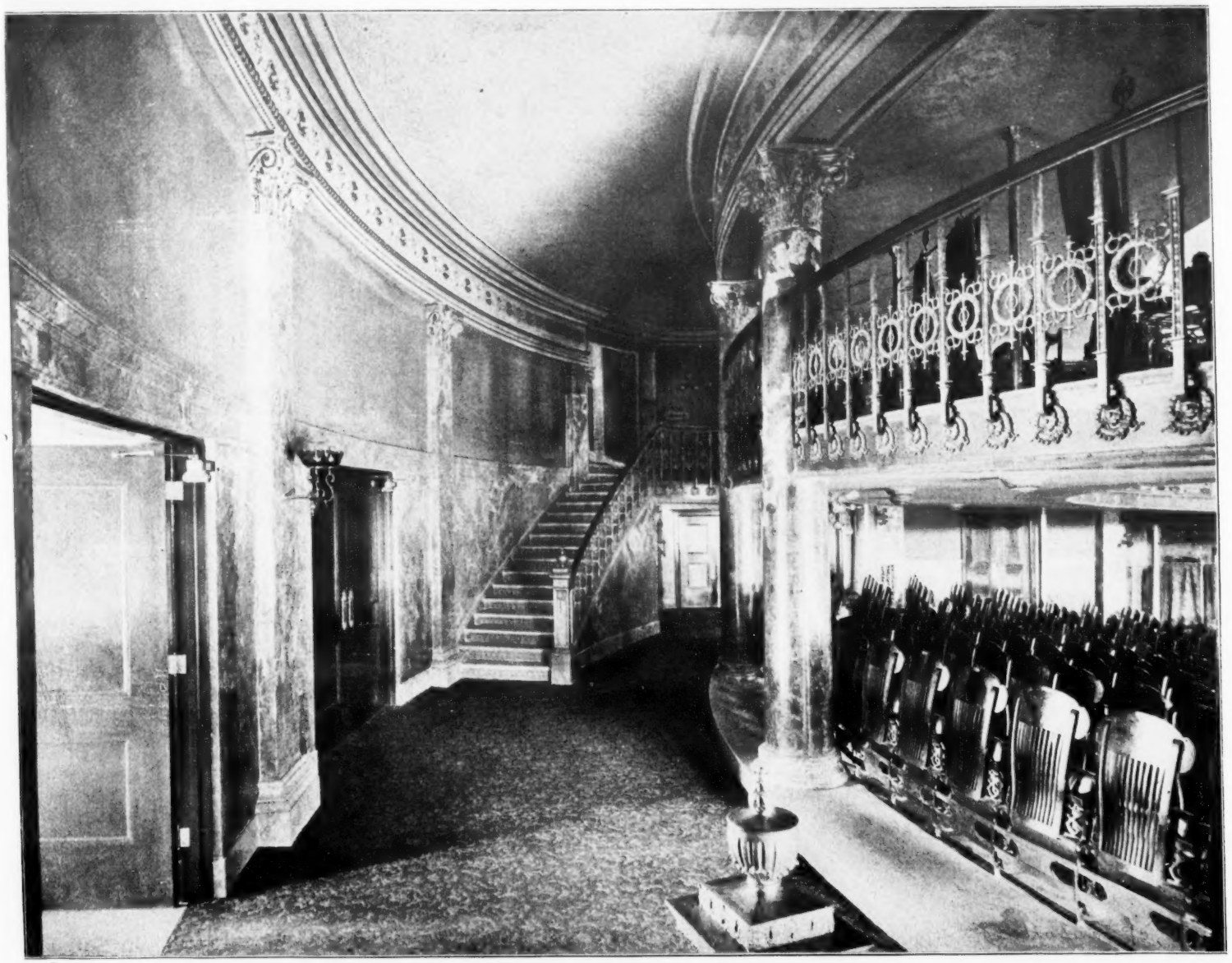
JANITOR
CVSTODIAN



INTERIOR VIEW, THE CALUMET CLUBHOUSE, MANCHESTER, NEW HAMPSHIRE.

WILLIAM M. BUTTERFIELD, ARCHITECT.



VIEW IN FOYER, NEW LA FAYETTE SQUARE OPERA HOUSE, WASHINGTON, D. C.

WOOD & LOVELL, ARCHITECTS, CHICAGO.

VIEW IN AUDITORIUM, NEW LA FAYETTE SQUARE OPERA HOUSE, WASHINGTON, D. C.

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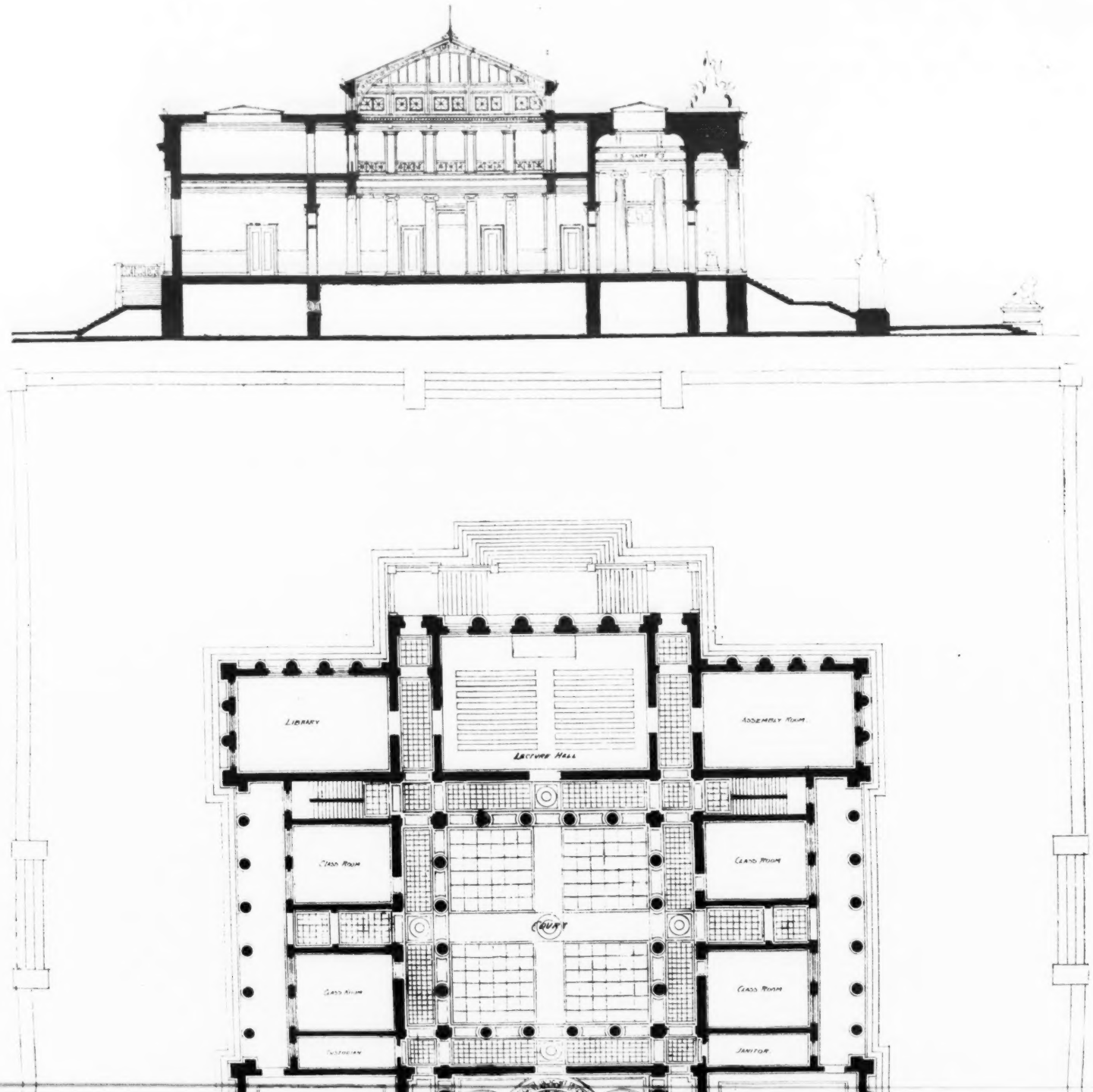
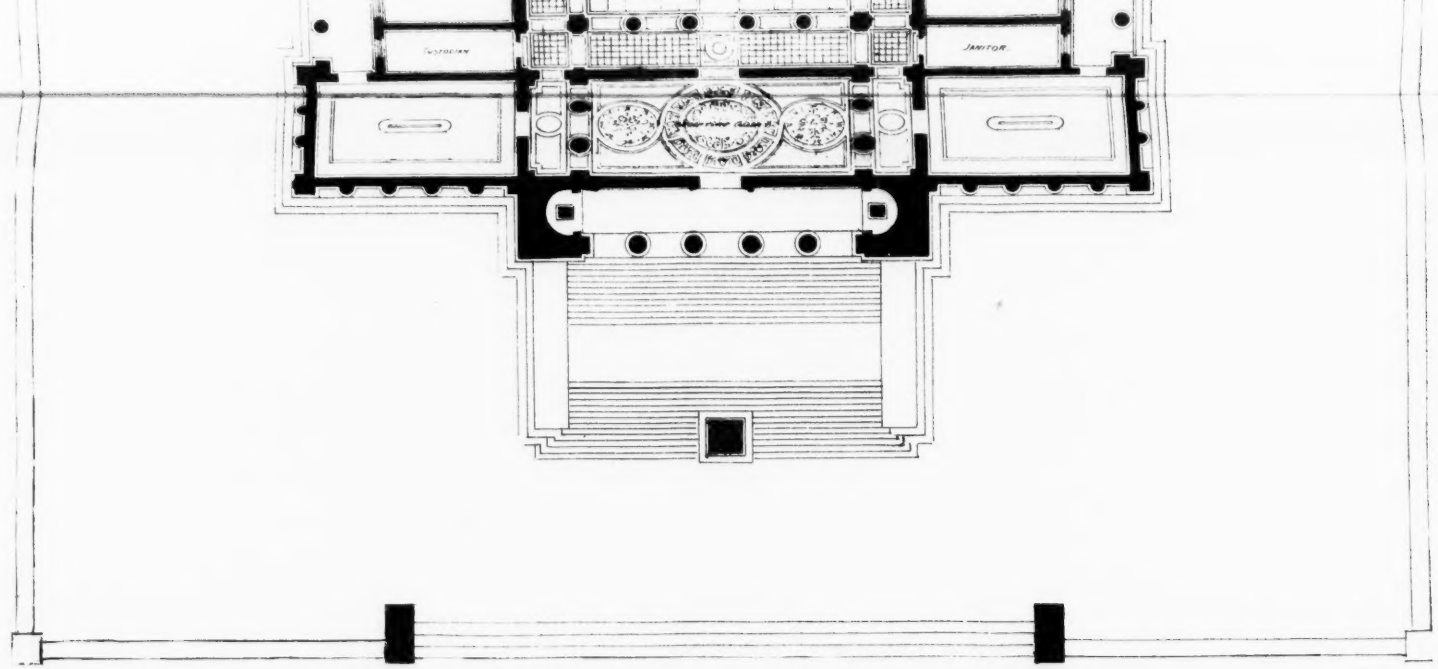
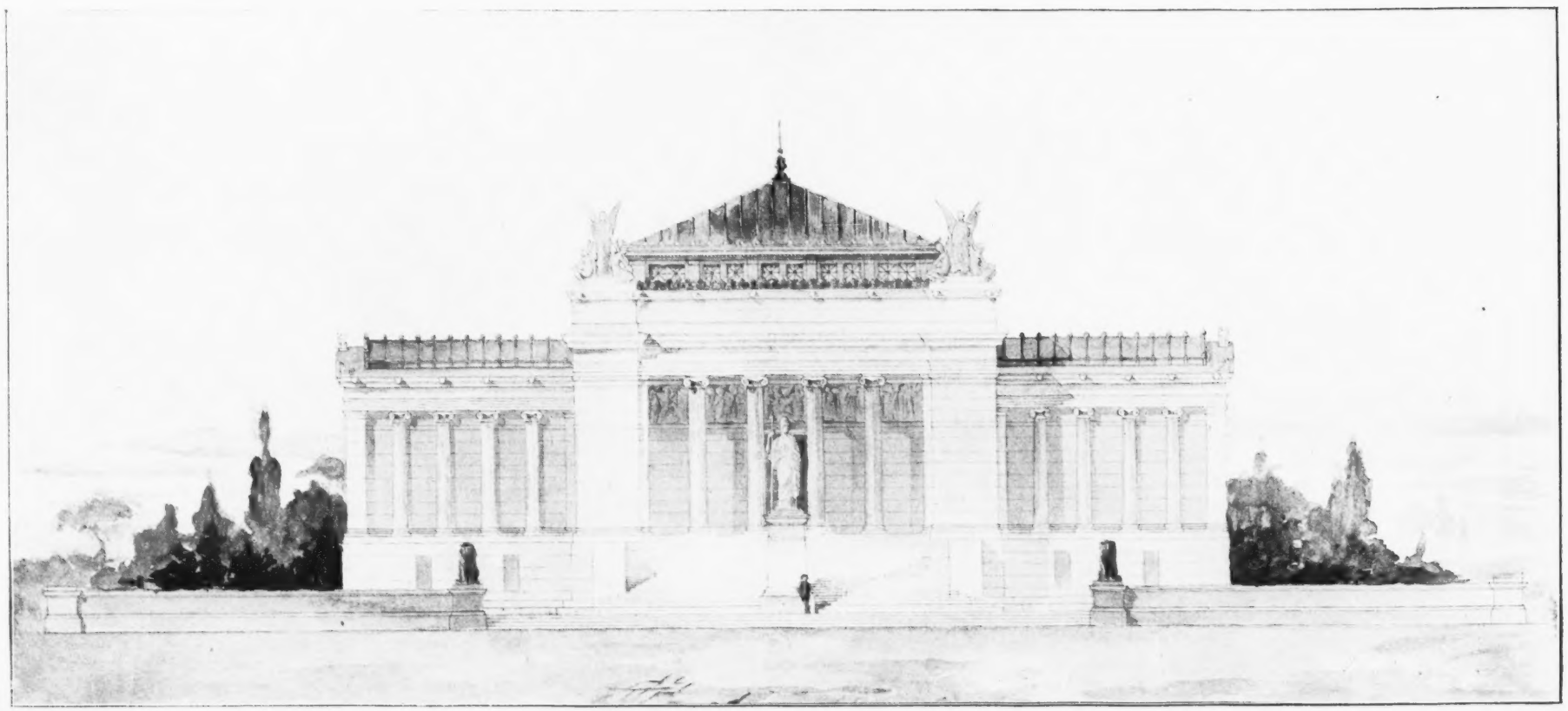

LIBRARY
LECTURE HALL
ASSEMBLY ROOM
CLASS ROOM
COURT
CLASS ROOM
CLASS ROOM
CLASS ROOM
JANITOR





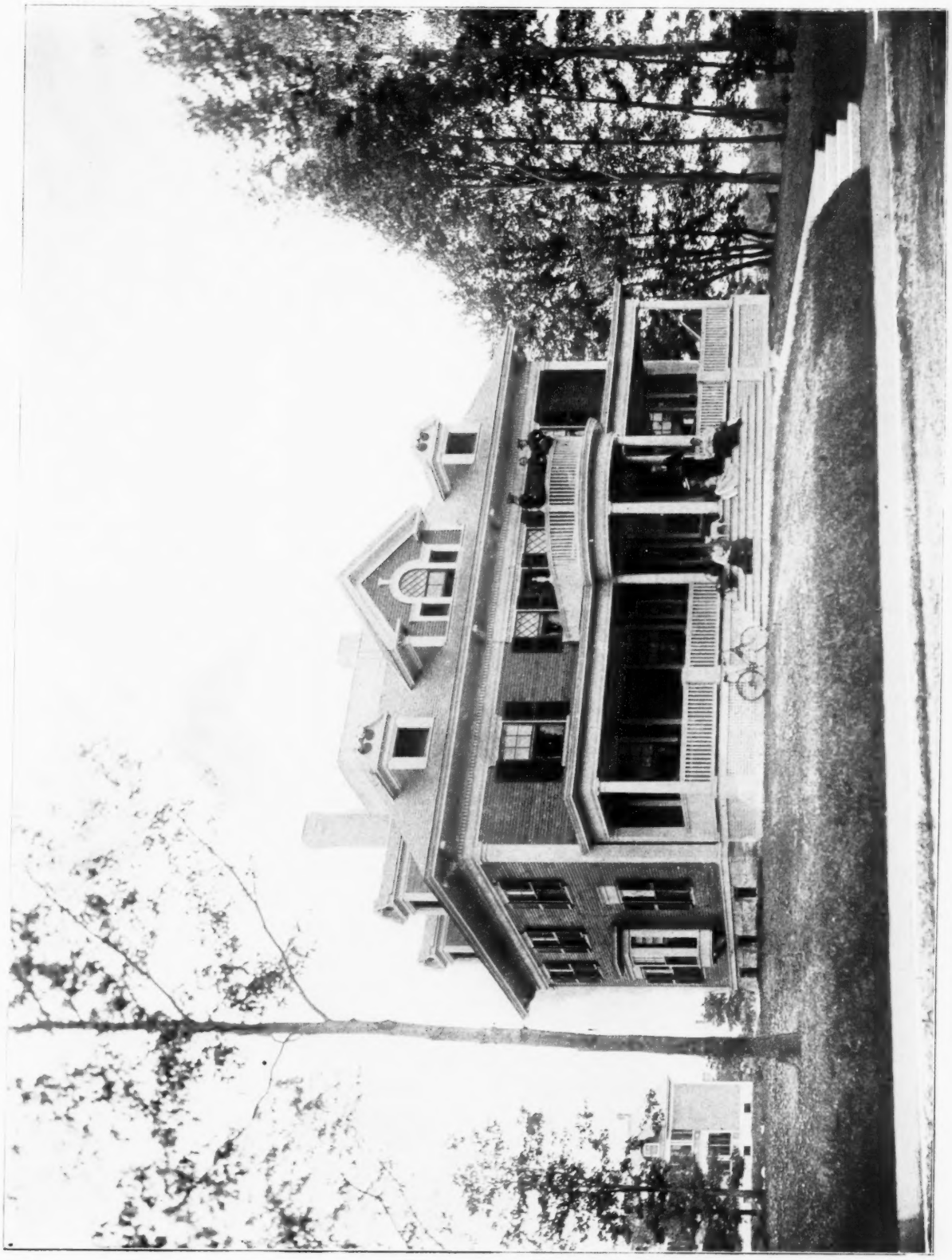
CHICAGO ARCHITECTURAL CLUB COMPETITION—AN ART SCHOOL.

GOLD MEDAL DESIGN—ADDISON B. LE BOUTILLIER, BOSTON, MASSACHUSETTS.

INLAND ARCHITECT PRESS.

RESIDENCE OF DR. COOLIDGE, CHICAGO.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.



RESIDENCE OF SOLON W. STEVENS, LOWELL, MASSACHUSETTS.

MILLARD F. DAVIS — HARRY C. RAYNES, ARCHITECTS.

NEW LA FAYETTE SQUARE OPERA HOUSE, WASHINGTON, D. C.

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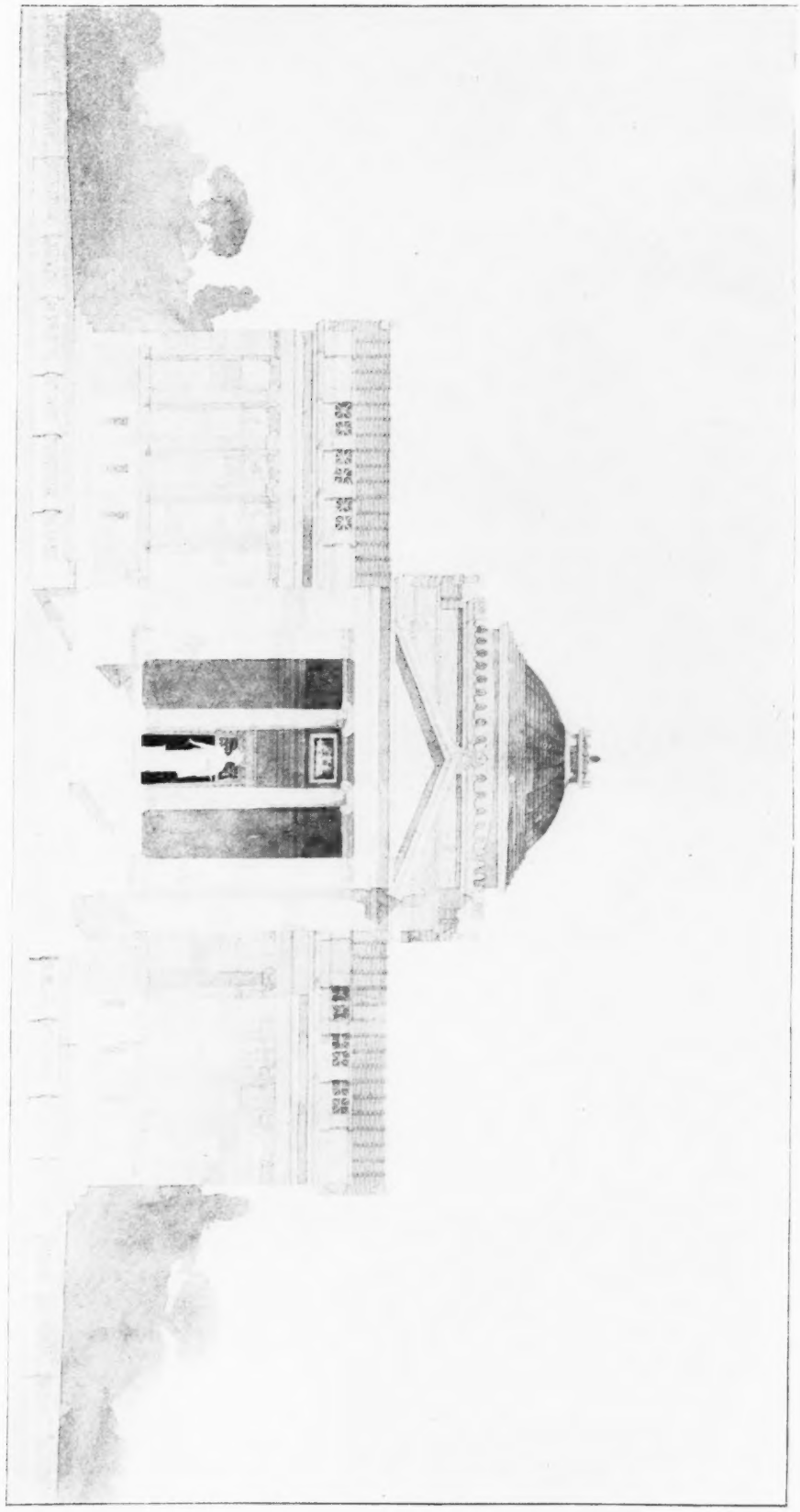
. THE CALUMET CLUBHOUSE, MANCHESTER, NEW HAMPSHIRE.

WILLIAM M. BUTTERFIELD, ARCHITECT.



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SILVER MEDAL DESIGN—WILLIAM LESLIE WELTON, LYNN, MASSACHUSETTS.

IRVING K. POND, DES. LORADO TAFT, SCULPT.

THE INLAND ARCHITECT AND NEWS RECORD

Entered at the Postoffice at Chicago as second-class matter.

CONTENTS.

THE INLAND ARCHITECT AND NEWS RECORD

Vol. XXVI. ADVERTISERS' TRADE SUPPLEMENT. No. 1

Valuable Publications Free.

Any architect can secure valuable books of reference without cost by sending for the catalogues of materials, etc., noticed from month to month in these columns. Large sums are spent on these catalogues, and they contain much practical information. Many are art productions. They may be obtained free on application to those issuing them. In writing please mention THE INLAND ARCHITECT, and oblige the journal and the dealer.

REQUESTS FOR CATALOGUES AND SAMPLES.

Those wishing catalogues and samples sent them by dealers in general may have their names inserted under this heading free of charge. The only recompense desired is that the dealers who send catalogues to these addresses give THE INLAND ARCHITECT due credit for business benefits that result.

Y. D. HENSILL and J. L. BOTHWELL, Architects, 10 Louise Building, San Jose, Cal.

S. B. BURTON & Co., Architects, Monterey, Mexico.

KINNEY & GUTTERSON, Architects, Mason City, Iowa.

CHAPMAN & VICKSON, Architects, 38 Kelly Building, Akron, Ohio.

Mr. Cresswell's Address Wanted.

Mr. CRESSWELL, draftsman, formerly of Boston, thence with N.-W. Terra Cotta Co., and latterly in St. Louis, please communicate with

"MANAGER,"
167 Dearborn St., R. 609,
CHICAGO.

TREASURY DEPARTMENT,
OFFICE SUPERVISING ARCHITECT,
WASHINGTON, D. C., August 2, 1895.

Sealed proposals will be received at this office until 2 o'clock P.M., on August 27, 1895, and opened immediately thereafter, for all the labor and materials required for the plumbing and gas piping for the United States Courthouse, Post Office, etc., at Detroit, Michigan, in accordance with the drawings and specification, copies of which may be had at this office or the office of the Superintendent at Detroit, Michigan. Each bid must be accompanied by a certified check for a sum not less than two per cent of the amount of the proposal. The right is reserved to reject any or all bids and to waive any defect or informality in any bid, should it be deemed in the interest of the government to do so. All proposals received after the time stated for opening will be returned to the bidders. Proposals must be inclosed in envelopes, sealed and marked, "Proposal for the Plumbing and Gas Piping for the United States Courthouse, Post Office, etc., at Detroit, Michigan," and addressed to William Martin Aiken, Supervising Architect.

"OPEN DOORS."

"Open Doors.—There are no secrets in making the best goods," is the title of the latest advertisement issued by Messrs. N. & G. Taylor Company, manufacturers of American tin plate, Philadelphia. This house has long been noted for its novelties in trade literature, but the present circular is something above the ordinary, and is quite original and striking. It conveys at once its meaning. The reader is confronted with the massive double doors of a factory above which is the inscription, "Open Doors," and underneath the words "There are no secrets in making the best goods." These two doors open at the touch, and bring immediately to view the interior of Messrs. N. & G. Taylor Company's tinning house. This is a reproduced photograph by the half-tone process, and shows in reality the workmen, the tinning stacks, tin racks, dusting boxes, etc. This tinning house it is claimed is the largest in the United States, and as the firm states, "with facilities to produce every grade of bright or roofing tin that is made." Twenty-two tinning stacks are shown that give an output of over 9,000 boxes weekly, by day work alone, but the most important thing that strikes the eye, is a large hand printed in bright red, pointing to the tinning stacks at the right foreground of the picture on which is inscribed—"The Genuine Taylor '*Old Style*' brand is made in the stacks shown on the right. Notice there is no shafting or machinery, the work being done entirely by hand, the same as in 1830," and here the "milk in the cocoanut" appears, and the whole import of the advertisement is quickly apparent. No acid flux is used to injure the black sheets, pure palm oil only being employed. These sheets are allowed to soak, and are literally "boiled in oil" before they receive their metal coatings. Made in this way, without any secrets, and with "Open Doors," Messrs. N. & G. Taylor Company may well advertise the brand which they originated so many years ago, and which they today hold as without a peer above their competitors.

DIXON'S GRAPHITE PIPE-JOINT COMPOUND.

Twelve or fifteen years ago this article was known under the name of "Smear Grease," and later was changed to "Pipe-Joint Grease." It really is not a grease, and as the name has caused some misunderstanding, the Dixon Company have decided to change it, and it hereafter will be known as "Dixon's Graphite Pipe-Joint Compound." This compound, under one or the other of its several names, has been in the market for about twenty years. It is not only useful for joints, and all steam, gas and water piping, but is equally useful for smearing gaskets and flange-joints of meters, traps, and for bolts, screws, etc. In the mills, mines and factories of the Dixon Company, this compound has been used in preference to any other article. It is infinitely superior both in usefulness and economy to red lead, and the Dixon Company recommend it as such with the fullest degree of certainty. That the company is not prejudiced in its favor is easily shown by the testimonials of its customers, among whom are manufacturers of steam and hot-air radiators and heating appliances, iron companies, machinists, engineers and contractors, railroad companies, gas companies, and general manufacturers.

The president of the Water and Lighting Department of Harrisburg, Pennsylvania, said: "I have long ago forbidden the use of white or red lead or anything but your graphite compound in this department. The result is that we have no more breaking of bolts or nuts on our street mains, valves, etc., or any trouble of that kind in or about our pumping plant. I think those plumbers or steamfitters who persist in the use of white or red lead are doing so purely through ignorance, as nothing is so costly, not even carelessness.

The use of red lead depends largely upon tradition. Our forefathers had nothing better, and knew of nothing better, but that is no reason why we should continue to use it while there is something so many times better and more economical.

The Graphite Pipe-Joint Compound is manufactured by the Joseph Dixon Crucible Company, Jersey City, New Jersey.

TRADE NOTES.

J. J. WADE & SON, 276 Dearborn street, Chicago, have contracts for the plumbing, gas fitting and sewerage in the Atwood building, Clark and Madison streets; J. D. Marshall building, Hobbie street and Hawthorne avenue, and in the two residences of C. L. Willey, Thirty-seventh street and Michigan avenue.

A PAVILION has been erected for the North Side Tennis Club, Chicago, which presents a very unique and attractive appearance. The walls are of terra cotta blocks up to two-thirds of their height; the remaining third is covered with the Ludowici tile of the scale pattern. The roof, hips, cresting and roof dormers are also of the Ludowici Company's tile and afford a good example of the adaptability of this company's product to every requirement. The scale tile used on the walls is very effective and costs no more than brick veneering. The Ludowici Roofing Tile Company, Chicago Heights, Illinois, are manufacturers of the Ludowici interlocking clay roofing and siding tile, glazed and unglazed.

THE large contract for furnishing the enameled brick to be used in the construction of the new Guaranty Building, Buffalo, New York, has been awarded to the Tiffany Pressed Brick Company, of Chicago.

THE United States Heater Company, of Detroit, have sent out a unique circular printed on a card very similar to an exaggerated postal card, the name of the company being printed at the top in such a manner as to add to the illusion. Their new factory is one of the best in its line in this country, and their facilities now enable them to fill all orders promptly and with the best quality of goods obtainable.

THE general use of abestos for heat insulation and fire protection in prominent buildings is handsomely illustrated in a little volume issued by the H. W. Johns Manufacturing Company. The common form in which asbestos is thus used is for pipe and boiler coverings, combining the advantages of heat insulation and protection against fires from overheated pipes and furnaces. A large number of prominent buildings in which the H. W. Johns asbestos coverings are used are shown in this little volume. Other uses of asbestos are for paints, roofing, cements, building felt and sheathing, packing, cloth, tape, gaskets, etc., fireproof cord, twine, rope, rugs, mats, screens, furnace cement, stove lining, concrete coating, electrical insulating sheets, rings, washers, pump valves, steam packings, lamp sockets, and a variety of electrical construction materials.

AMONG the many testimonials to the superiority of the Buffalo Forge Company's apparatus is the following: "Baltimore, August 2, 1895. Buffalo Forge Company, Buffalo, New York: Gentlemen,—It may interest you to know that Music Hall, Baltimore, Maryland, enjoys the distinction of being one of the largest, finest and best appointed concert auditoriums in the world. In one respect it excels any public building in this country, and that as regards its heating and ventilating system. The plant which your company furnished Music Hall for this purpose has been preëminently satisfactory, and has contributed in no small degree to the luxurious and comfortable air temperature which is always maintained in every auditorium and apartment in our spacious building. Respectfully, John J. Nolan, Manager."

SINCE their removal from 210 Kinzie street to 57-63 Illinois street, Flanagan & Biedenweg have occupied one of the most commodious and complete establishments for the production of art glass in this country, or, in fact, in the world. Their present property was purchased outright by them with a view to having a permanent location with sufficient ground space to insure plenty of room for a long series of years to come. The frontage on Illinois street is 125 feet, all of which is improved with a substantial brick building entirely occupied by Flanagan & Biedenweg. The best machinery that modern mechanical skill can supply is provided for the manufacture of beveled glass, metallic sash, leaded and art glass, cathedral and memorial windows. These facilities, with a large force of skilled workmen and designers, have given Flanagan & Biedenweg an enviable reputation wherever their work has been seen. They received five awards at the World's Columbian Exposition, and were awarded highest premium and gold medal at the Midwinter Fair in San Francisco. Flanagan & Biedenweg's specialties are the production of art glasswork for fine residences,

ADVERTISERS' TRADE DEPARTMENT—Continued.

as well as cathedral and memorial windows before mentioned. Their shipments extend to every state in the Union, to Canada and many foreign countries. In this art, as in others, America is in the lead. The only claim to superiority for foreign cathedral work is its historical and ecclesiastical accuracy. But as regards beauty of workmanship and mechanical perfection, the productions of Flanagan & Biedenweg are far superior to those of foreign manufacturers. A French or Italian worker, for instance, might more accurately represent the proper costume of the time his pictured window speaks, but in finish and general effect his work could not compare to the best this country can produce. Flanagan & Biedenweg now have in preparation an elaborate fancy catalogue, which will be ready for distribution about August 1.

REFLECTORS, in every size, style and variety are shown in Frink's new catalogue. For thirty-seven years Frink has made church and public lighting a specialty. Beginning with church lights in 1857, he now manufactures every conceivable kind of reflectors, for electric, gas, oil and day light. Frink's line, however, includes something more than reflectors, the most beautiful patterns in electroliers, chandeliers and drop lights being manufactured by this house.

AT no time in the building of the American country house have so few clapboards been used as at present. The increased use of shingles, from the small dwelling to the magnificent Newport cottage, is apparent everywhere. This has largely been due to the succesful use and lasting qualities of shingle stains. In the use of shingle stains two things are more to be desired than anything else: First, that the stain holds its color and, second, that it preserves the shingles. Holding of the color is due greatly to the oils which are used and which penetrate the wood. The preserving of the shingles is more due to the goodness of the shingles themselves than to anything the stain can do to improve them in lasting qualities. Shingles on many of the buildings in New England have lasted fifty years. Oftentimes stains are recommended which contain chemicals which are known to be preservatives, but only under certain conditions. Certain chemicals will preserve wood which is to be placed in the water or half-buried in the earth as railroad ties, whereas, if this same chemical is used in shingle stains and exposed to the air, the chemical process which follows simply destroys the fabric and fiber of the shingles, and in a short time charcoals the wood. Oil undoubtedly is one of the best preservatives of wood when the wood is to be left exposed to the atmospheric changes, and the shingle stains manufactured by Dexter Brothers have proved themselves to be unexcelled, as they are wholly oil stains and the pigments used are finely ground and brought to this country from England. The H. M. Hooker Company, 57 West Randolph street, Chicago, Illinois, carry all the numbers of Dexter Brothers' English Shingle Stains in stock in large quantities, and they find the demand for them so much greater than ever before that they wish to call the attention of the western architects to the fact that they can supply them direct from Chicago without the necessity of waiting to send all the way to Boston. On the Pacific Coast, Smith & Young, San Francisco and Los Angeles, carry the stain in stock and avoid the delay which would be necessary if they had to have them shipped from the East. These facts should be of interest to the architects who are using their stains.

THE "Columbian" system of fireproof floor construction, as introduced by the Columbian Fireproofing Company, of Pittsburg, Pennsylvania, consists in the use of special ribbed bars of steel, suspended from beams, and supported on edge by means of steel stirrups, which have the profile of the bar cut in them, these bars being surrounded by, and completely imbedded in, concrete composed of Portland cement, sand and furnace slag or screenings. The floor thus constructed derives its strength from three elements: the strength of the steel bar on edge; the strength of the concrete, and the strength derived from the combination of the steel and concrete. The severest tests indicate that it is practically impossible to break down a floor thus constructed. The floors have withstood, without the slightest injury and without even cracking the plaster, a drop load of 238 pounds from a height of eight feet, also of 303 pounds from a height of six feet, repeated several times in the same spot. As a fire-resisting material, authorities agree that concrete is unexcelled. The "Columbian" floor is economical because it requires a comparatively small amount of iron and plaster and no concrete filling. A saving of weight also is claimed for this construction.

THE tenth edition of W. R. Ostrander & Co's catalogue of speaking-tube hardware, electric bell goods, electric light material, telegraph and telephone goods, and general electric supplies, is a large book, profusely illustrated and constituting a complete compendium of information on the subject of electrical materials. The goods illustrated are of Ostrander & Co's own manufacture, at their factory, 1433 and 1435 DeKalb avenue, Brooklyn, New York, and include a full line of supplies for the following departments: Speaking tubes, electric call bells, burglar alarms, electric lighting, electric gas lighting, electric fan motors, watchman's clocks, telephones, telegraph supplies, mechanical door bells, pneumatic call bells, etc. The illustrations and descriptions are so complete that the volume is a valuable handbook for the architect's office.

RAILROAD NOTES.

THE QUEEN & CRESCENT ROUTE TO CHICKAMAUGA.—G. A. R. members and their friends will all want to attend the great National Park dedication at Chickamauga this fall. It will be a notable event. Do you want to know *how* to make the trip, and what you'll see when you reach the journey's end? Write to W. C. Rinearson, G. P. A. of the Queen & Cresent Route, Cincinnati. Illustrated and descriptive matter upon application. The Queen & Crescent to Chattanooga is the shortest line, and has an incomparable service of handsome trains of standard day coaches. Through sleepers, parlor, café and observation cars from Cincinnati. Quick schedule and magnificent scenery *en route* help to make the Queen & Crescent the southern route par excellence.

NIAGARA FALLS EXCURSION.—The Niagara Falls excursion of this year will be run from Chicago, Friday, August 16, by the Chicago & Grand Trunk Railway. A series of special trains leave Dearborn station at 2 P. M., with through baggage cars, passenger coaches and Pullman sleeping cars. Round trip excursion fare is only $7. Tickets good on these special trains and good to return on any regular train for one week from day of excursion. Apply early to City Ticket Office, 103 Clark street, corner of Washington street, or address E. H. Hughes, general western agent. Sleeping car tickets, $3 for double berth. Tickets now on sale. Purchase early and secure best accommodations.

THE G. A. R. AT LOUISVILLE.—Are you going to Louisville to attend the twenty-ninth annual encampment of the G. A. R., September 11 to 14? The Monon Route is the national official route, Chicago to Louisville, and the Battlefield Line from Louisville to the South. Special accommodations will be provided for all those who attend. In addition to the two regular trains daily (morning and evening), special trains will be run at such hours as will best accommodate the veterans, and special cars will be furnished posts of twenty-five or more members if so desired. Also special sleeping cars can be arranged for. The fare from Chicago to Louisville will be $6 for the round trip, and from Louisville to Chattanooga $6.35 for the round trip. Tickets will be limited a sufficient length of time to enable members of the G. A. R. to visit Chickamauga battlefield. The National Park at that place will be dedicated with imposing ceremonies after the encampment at Louisville. For rates, special trains, special coaches, sleeping cars and further information, address Sidney B. Jones, City Passenger Agent, 232 Clark street, Chicago; L. E. Sessions, Traveling Passenger Agent, Minneapolis, Minnesota, or Frank J. Reed, General Passenger Agent, Chicago.

THE INLAND ARCHITECT AND NEWS RECORD

Vol. XXVI. ADVERTISERS' TRADE SUPPLEMENT. No. 2

Valuable Publications Free.

Any architect can secure valuable books of reference without cost by sending for the catalogues of materials, etc., noticed from month to month in these columns. Large sums are spent on these catalogues, and they contain much practical information. Many are art productions. They may be obtained free on application to those issuing them. In writing please mention THE INLAND ARCHITECT, and oblige the journal and the dealer.

REQUESTS FOR CATALOGUES AND SAMPLES.

Those wishing catalogues and samples sent them by dealers in general may have their names inserted under this heading free of charge. The only recompense desired is that the dealers who send catalogues to these addresses give THE INLAND ARCHITECT due credit for business benefits that result.

Y. D. HENSILL and J. L. BOTHWELL, Architects, 10 Louise Building, San Jose, Cal.

S. B. BURTON & CO., Architects, Monterey, Mexico.

GILES & GUNIDON, Architects, Palacio Mercantil, San Luis Potosi, Mexico.

HUBBELL & BURROWS, Architects, Room 41, Mitchell & Lynde Building, Rock Island, Illinois.

WELL-MERITED SUCCESS.

A visit to the Richards & Kelly Manufacturing Company's factory, at 389-391 Twenty-third street, is full of interest to the practical builder. The entire establishment is devoted to the manufacture of sidewalk, floor and vault lights, skylights, coal-hole covers, trap doors, etc. Richards & Kelly are pioneer manufacturers in this line in the West, and their works are complete and extensive. They keep in stock a large variety of standard designs, and also have a well-equipped department for drawing or executing special patterns. The importance of combining great strength with proper lighting facilities in the construction of coal-hole covers, iron doors, etc., is too apparent to architects to need more than passing mention. This is accomplished by the use of the best of steel, and the insertion of from 6 to 133 lenses in the vault covers and doors. The usual objection to these lights, that they become clouded with dirt, is avoided by the Richards & Kelly Company by the use of a convex lens, which is easily cleaned and gives a stronger light than the plain lens. The refracting lens used for sidewalk lighting has the effect of throwing the light back into the basement, and works very nicely if kept clean. Our attention was drawn especially to the Herr patent ventilating vault lights, in which the lower portion of the cover is allowed to drop and open the light holes whenever ventilation is desired; also to the ventilating doors for sidewalks, which are self-locking and watertight when closed, and protect the hole when open; and also the ventilating risers for outside steps. These details give an idea of the completeness and thoroughness of the work done by this firm. Their skylights and floor-lights are made in a great variety of patterns. The skylights can be made either curved or straight, to fit any design. In this important branch of architectural work the Richards & Kelly Manufacturing Company excel.

THE "TAYLOR OLD STYLE" BRAND OF ROOFING TIN.

Messrs. N. & G. Taylor Company, manufacturers of the "Taylor Old Style" brand of roofing tin, Philadelphia, are out in a neat advertisement. It is a four-leaf folder, on heavy paper, printed in two colors in attractive type. It is entitled, "A Roofing Tin that Will Last as Long as the Building." They also devote a page to the "Secrets in the Tin-Plate Trade," and go on to say that the "*secrets*" in the tin-plate trade are in the producing of plates that appear other than what they are. The circular also states that their special brand, "The Taylor Old Style," is the only plate made today exactly the same as in 1830, since which time it has never caused a complaint. To those interested in good roofing tin, we would suggest that they write to the N. & G. Taylor Company, Philadelphia, and secure samples and prices. This firm has always enjoyed the reputation of handling the best of goods.

PERFECTION FURNACE PIPE.

It is hardly possible to lay too much stress on the importance of proper furnace piping, especially in dwellings. The element of danger from fire alone renders this a matter of prime importance. Then there are the further considerations of economy, of heat, cleanliness, healthfulness, etc., etc., which, combined, should make the architect especially careful in the proper specification of all furnace connections. The Perfection Furnace Pipe Company, of Toledo, Ohio, has perfected a furnace pipe which is safe and economical; safe, because it cannot, by reason of its construction, communicate fire to or char the woodwork, as every joint and piece is made double throughout, with an air cushion between inner and outer wall; economical, because it saves insurance, fuel and time of workmen, and does away with the necessity for iron lath, wire netting and asbestos paper. This pipe is made by machinery specially adapted for its manufacture, from the best bright tin plate, without rivets or solder, double throughout, in lengths of 3, 4½, 7, 10, 12, 14 and 20 inches, which permit the construction of any desired length or style of stack, without cutting a single piece or wasting a part of an inch of material. When the joints, foot pieces, register boxes, elbows, etc., have been assembled, they form a perfect shaft, which will neither buckle, twist nor part at the joints. Sections and joints of this pipe are shown on another page of this issue. It will be observed that the principle of separate compartments for hot and cold air has been adhered to in all constructions.

TRADE NOTES.

THE drill hall of the new armory of the 14th Regiment N. G. S. N. Y., has been fitted with thirty of I. P. Frink's celebrated reflectors. Each reflector is fitted with fifty gas burners, making a total of 1,500 points of light when all are lit. The gas jets aided by the Frink reflector will light up the drill floor brilliantly.

RECENT contracts with the Tiffany Pressed Brick Company for enameled brick include the following: Hoster Brewery, Columbus, Ohio; Gas & Electric Company, Oberlin, Ohio; Courthouse Power House, Toledo, Ohio; Mabley Building, Detroit, Michigan; Chicago & Alton R. R. Depot, Springfield, Illinois; Deaf and Dumb Institute, Jacksonville, Illinois.

A PONDEROUS volume of over 800 pages is Hendricks' "Architects', Builders' and Contractors' Directory of America," containing over 200,000 names, addresses and business classifications. The work opens with an alphabetical list of architects, and then follow contractors and material men in every department, from the raw material to the finished work. New York: Samuel E. Hendricks Company. $5.

THE following letter testifies to the efficiency of the Buffalo Forge Company's system under severe conditions:

SAUGERTIES, New York, July 31, 1895.

Buffalo Forge Company:

GENTLEMEN.— Your favor of the 30th inst. received. It gives us great pleasure in recommending your exhaust fans and superheating plans.

We had very serious trouble in our factory caused by one-half of our building being used as a dry-room, and the other half as a finishing room with only a one-inch board partition between, extending within 20 feet from each end. The hot air would get through on the finishing side, and cause the ceiling and all the machinery to sweat so much that we frequently had to stop work until we could get both rooms to the same temperature. With the expenditure of less than $800, we ventilated and are keeping two rooms side by side, each 300 by 25 feet, 17-foot ceilings, temperature in one 105, the other 72, and not the slightest sweating. We can safely say we saved more than our entire expenditure in the first six months since your plans were installed in our building, besides the pleasure of having good wholesome air and temperature for our employes to work in. We remain,

Yours respectfully,
THE MARTIN CANTINE COMPANY,
Per Martin Cantine, Treasurer.

THE use of porcelain ware in bathroom, laundry and kitchen fittings has of late years given an elegance and finish to modern plumbing that was never before attainable. By a special process the Victor Manufacturing Company, of Blairsville, Pennsylvania, have succeeded in turning out a porcelain enamel of the highest grade, and of unsurpassed beauty. Their enamel is white, hard and smooth, possesses a high glaze, is very durable, and is thoroughly fused into the iron. They make a large line of baths, laundry tubs, sinks, with backs and legs, slabs and bowls, closets, hoppers, traps, urinals, etc. They are also prepared to turn out special work of every description, for which they have excellent facilities, and the quality of which they stand ready to guarantee.

A COMPLETE directory of steam specialties would seem to be an indispensable adjunct of every considerable engineering office or workshop. Hewlings' directory, though not recent, is an attempt at thoroughness in this particular, and consequently is worthy of confidence. It appears in neat typography, with substantial cover, and contains an extensive list of manufacturers of and dealers in every conceivable device and appliance in the steam engineering line, from boilers to belts. The principal object in compiling the book is stated by the compiler to be to include complete lists of all the manufacturers of specialties under their respective headings. This is a difficult undertaking, owing to the fact that new devices are continually being introduced and old ones withdrawn or becoming obsolete, but Mr. Hewlings has succeeded fairly well in his first attempt.

THE Morse steel wall ties, manufactured by J. B. Prescott & Son, Webster, Massachusetts, are especially designed for bonding hollow walls, tying terra-cotta work, securing pressed or enameled brick facings, anchoring ashlar, marble or jasper facings, bonding linings, or straightening any form of masonry. They are made in three forms for purposes indicated by their names, namely, veneer ties, repair ties, and galvanized steel anchors. The advantage of hollow brick walls in building is too self-evident to need demonstration. It is the method usually adopted to keep dampness from penetrating into the interiors of houses. Another advantage is that hollow walls secure a more even temperature, the air space acting as a non-conductor of heat and cold. In the Morse ties a peculiar construction called the drip, the tie being sharply bent in the center, prevents moisture from penetrating to the inner wall. Any water that may collect on the tie drips down to the gutter at the foot of the wall. This will be at once recognized as a superior arrangement when contrasted with the ordinary brick bonding, because bond brick are good conductors of moisture. The entire subject of bonds is treated clearly and at length in Prescott & Son's catalogue, which is sent by them on application.

Two handsome little volumes have just been issued by the Babcock and Wilcox Company — one on "High Pressure Steam," the other entitled "Facts." Both works are profusely illustrated, after the manner of the publishers of "Steam," and abound in practical suggestions to all users of steam boilers. The former shows the development in this country of the high pressure idea in boilers; how from the early idea of low pressure and

condensing plants the modern plan of high pressure boilers has been evolved. In 1875 the pressures carried did not average over 65 pounds, in 1880 about 90 pounds, in 1890 about 125 pounds, and at the present time pressures ranging from 185 to 250 pounds are not uncommon. In this development the Wilcox idea of sectional water-tube boilers has played a prominent part. "Facts" is a collection of fifty-five plans of boilers which have been variously exploited in the past and have been finally discarded because they could not be cleaned. This publication, with complete illustrations of each form, is made for the purpose of exposing present inventors who merely rehash old combinations under a new name, and claim for their rejuvenations remarkable qualities which have long since been proven impracticable. Both these latest publications of the Babcock & Wilcox Company are valuable additions to the literature of steam engineering.

S. J. AVERY, 88 La Salle street, Chicago, has recently taken the agency for the Richardson & Morgan Company's steam and hot-water heaters. Mr. Avery's services are at the command of architects and contractors in the matter of efficient and economical heating of residences and public buildings, and the Richardson & Morgan line of heaters includes every modern appliance required to fill this important want. It is claimed that in economy and efficiency there is very little, if any, difference between the low-pressure steam and the hot-water systems. In either system the pressure carried is so small in proportion to the strength of the materials used that all danger is reduced to the minimum. Among the products of the Richardson & Morgan Company are their New Cyclone steam boiler, Cyclone combination hot-water and hot-air heating furnace, their hot-water stoves, etc., all of which are of interest to intending builders and are fully described and illustrated in their latest catalogue. In the New Cyclone the water cylinder and steam dome or chest are connected by a series of heavy wrought-iron vertical tubes, which insure easy and rapid circulation of the water in all parts of the boiler and bring the water into direct contact with the fire, causing the heat to act with great power and effect.

A SPECIAL committee of the American Society of Civil Engineers, detailed to investigate the subject of the preservation of wood from decay, has spent four years in practical experiment and observation, besides inquiry into the experiments and conclusions of others extending over a period of more than thirty years. Their investigations included all the established methods of preservation, such as treatment with creosote, zinc salts, etc., and also with the products of petroleum. The latter have been claimed by many to be strong in preserving properties; and as they are very cheap, the substantiation of these claims was of special importance. The following are extracts from the report of this special committee. The page numbers given refer to the pages of the report:

Page 265. "Experiment proved that oil of tar, or creosote, was perhaps the most powerful coagulator of the albumen (of wood), while it, at the same time, furnished a waterproof covering for the fiber, and its antiseptic properties prevented putrefaction."

Page 273. "There seems to be no question that when creosoting is well done it is effective."

Page 276. "It thus appears that there is no process of wood-preserving the efficacy of which, when well done, is better established than creosoting."

Page 274. "The conclusion drawn was that crude petroleum, by excluding moisture, would prove a preservative as long as it continually saturated the wood; but that if merely injected once for all, its volatile nature would result in its evaporating and leaving the timber unprotected."

Page 287. "The pine blocks upon Sixteenth street (experiment 25) were treated with the residual products of petroleum distillation. It is stated that this was the only process where pressure was used. In from three and a half to four and a half years the blocks were badly decayed, and large portions of the street were almost impassable, while other streets paved in the same year with untreated woods remained in fair condition."

THE INLAND ARCHITECT AND NEWS RECORD

Vol. XXVI. ADVERTISERS' TRADE SUPPLEMENT. No. 3

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LOU. VAUGHN, Architect, Blair, Neb.

O. H. CARPENTER, Architect, Joliet, Ill.

MORRIS M. GLEICHMAN, Architect, Room 15 Nottingham Building, Cleveland, Ohio.

WILLIAM W. PRICE, Contractor, Monterey, Mexico.

TRADE NOTES.

ATLANTA EXPOSITION.—One of the greatest fairs ever known to America. Many features of the Chicago World's Fair and many additional and new ones. Open September 18 to December 31, 1895. Low rates via the Queen & Crescent Route. Write to W. C. Rinearson, general passenger agent, Cincinnati, Ohio, for printed matter, or call upon Queen & Crescent agents for full information.

THE Cortright Metal Roofing Company have recently issued a new catalogue descriptive of their special products, namely: metal slates, victoria shingles, ridge-coping, hip-covering, valleys, etc. It will be furnished on application, and, doubtless, will interest anyone connected with roofing materials. The company's main office is located at 50 North Twenty-third street, Philadelphia, and the Western branch at 134 Van Buren street, Chicago, Illinois.

PROBABLY in no class of buildings is an efficient heating and ventilating plant more appreciated than in a theater, especially the feature of pure air kept always at the right degree for comfort; this is embodied in the plant installed by the Buffalo Forge Company in the Baltimore Music Hall. The following letter is one of many commendations from the management and owners of the building:

BALTIMORE, August 2, 1895.

Buffalo Forge Company, Buffalo, New York:

GENTLEMEN.—It may interest you to know that Music Hall, of Baltimore, Maryland, enjoys the distinction of being one of the largest, finest and best appointed concert auditoriums in the world. In one respect it excels any public building in this country, and that, as regards its heating and ventilating system and the plant which your company furnish a music hall for this purpose, has been preëminently satisfactory and has contributed in no small degree to the luxurious and comfortable air temperature which is always maintained in every auditorium and apartment in our spacious building.

Respectfully, JOHN J. NOLAN, *Manager.*

THE careful tests made by experienced locomotive engineers demonstrated most conclusively that Dixon's pure flake graphite is as necessary to a well-equipped engine as an oil can or a monkey wrench. For cooling or preventing hot pins and eccentrics, for lubricating journals in truck and driving boxes, for cylinders and for general use, Dixon's graphite was found indispensable. It gave free and easy action to valve motion. Valves worked free and reserve levers could be held with one hand, even when full boiler pressure was used. The wear of link and valve motion was reduced to a minimum, and the hauling capacity and life of the locomotive greatly increased. It was also found that the engine would work two or three notches closer in cut-off, which effected a saving in fuel and water, and in cylinder and valve oil. Dixon's finely powdered graphite was used in preference to the regular brand for the check valves of air cylinders, for lubricating the equalizing piston of air-brakes, for preventing "squealing" of air pumps, and for all delicate or small parts, and for oil cups with feeding holes too small for the regular graphite. In descending heavy grades, when train has to be held and pump worked to full capacity, lubrication with Dixon's graphite made a most marked and satisfactory difference.

JENKINS BROTHERS' new catalogue of steam valves and specialties claims the especial attention of the trade, by reason of recent improvements in their manufactures. Their iron body valves have been improved by increasing the thickness of flanges and adding more bolts—making them suitable for either high or low steam pressure. The Jenkins disks are a great improvement over anything of the kind in the market. They are especially adapted to stand high-pressure steam. Jenkins' Standard Packing is warranted to make the worst joint tight, or the manufacturers will refund the money. They claim that it will last as long as metal itself, as it does not rot or burn out—saves labor, money and time. The numerous steam specialties bearing the Jenkins trademark are all on the highest order of goods in that line.

THE Pioneer Fireproof Construction Company, of Chicago, are getting out a 17-foot arch which will be used in the Occidental building now being erected in that city. This, we think, is the largest arch that has ever been made, and will be fully illustrated and described in a later number. To see the list of buildings for which this company has furnished fireproofing during the past year one would not think that building operations had been particularly quiet in the West. Some of the more important contracts taken were for the Fisher, Occidental and Ryerson buildings, Kenwood, Straus and Irving apartments, and Drovers' Bank, Chicago; St. Joseph's and St. Luke's Hospitals, St. Paul; Lonsdale office building, Duluth; new city hall, Davenport, Iowa; Lincoln Telephone building, Lincoln, Neb.; Shawnee County Courthouse, Topeka, Kan.; Hutchings and Sealy office buildings, Galveston, Tex.

A NUMBER of years ago it became apparent to the Buffalo Forge Company that around every large brick plant a great deal of heat was being wasted. They are now introducing large numbers of steel-plate fans of special construction to be used for drying purposes, and which utilize the heat from the burning kilns in so doing. They have large fans for such service in use at the yards of the May, Purington & Bonner Brick Company, Weber-Labahn Brick Company, Jefferson Brick Company, B. F. Weber, and other well-known houses of Chicago and other large cities. Upon this improved apparatus the Buffalo Forge Company have obtained patents, and also upon the special arrangement and application for drawing heat from one kiln to another for cooling purposes. Messrs. Oakland Press Brick Company, Zanesville, Ohio, speak as follows of an apparatus recently installed for this work: "We wish to write and tell you how well pleased we are with your fan, which we have had in use now long enough to test its merits. It seems to work admirably, runs with little or no expense, and does our work for our five kilns nicely. We want to try and use it for our dryhouse also, for drying our brick, but as yet have not made such arrangements. We use it for drawing the heat from one kiln to another and for cooling off our kilns. We will always be glad to recommend your fans as A. No. 1."

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Vol. XXVI. ADVERTISERS' TRADE SUPPLEMENT. No. 4

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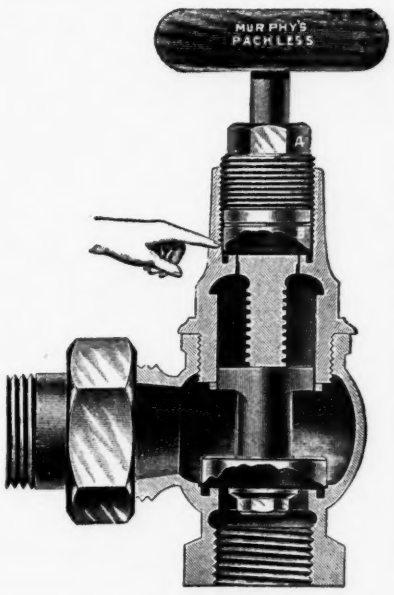
THE MURPHY'S PACKLESS RADIATOR VALVE.

This valve, shown by the accompanying cut, is being placed on the market by C. P. Monash, manager of the Van Auken Steam Specialty Company, of Chicago, and the



value of a packless valve will be readily appreciated. This valve has been thoroughly tested by parties who are experts in the steam engineering line, and we are informed that it has proven entirely satisfactory.

The disk lettered B in the neck of the valve does the work, and is guaranteed to save the annoyance of escaping steam, water, air or gas. This disk is adjusted by the nut lettered A. The material and workmanship used in the construction of this valve are first-class in every respect, and it is made for high or low pressure, and in globe, angle and straight-way styles.

Parties who would like to see a valve that has no packing, will not leak, and will give no trouble and expense, should address C. P. Monash, manager.

TRADE NOTES.

IN connection with the new announcement of the N. & G. Taylor Company, which will be found in another column of this issue of THE INLAND ARCHITECT, the attention of architects and owners is called to the fact that the "Taylor Old Style" brand of roofing tin is made today exactly the same as roofing tin was originally made in 1830, and at that time handled by this house. They have roofs in Philadelphia that were then covered with this kind of tin and are said to be just as good today as when first put on, nearly seventy years ago. The "Taylor Old Style" brand is made by the "palm oil" process entirely. No acid flux is used to injure the plate, nor are any rolls or machinery used, each sheet being dipped by hand in open pots of metal by successive immersions. Made in this way it is estimated that the "Taylor Old Style" will outlive the life of the building itself. It is a certainty when a really good tin roof is required.

"BIMETALLIC" is the motto of the Sportsman's Shot Works, of Cincinnati, Ohio, in the manufacture of traps. Their advertisement on another page tells the whole story, and will be read with interest by every architect who wants to specify a first-class trap at a moderate cost. They are neither lead nor brass but a combination of metals, and are said to possess all of the virtues without any of the vices usually encountered in monometallic traps. In other words, they have all the good points of the lead and the brass traps without the defects of either. On this foundation the Sportsman's Shot Works base their claim that their traps are better than any others and are cheaper than brass traps. The very essential quality of a perfectly smooth interior is obtained by the use of the combination metal, and beauty of exterior is secured by electroplating. The exterior is made still further attractive by having all joints entirely concealed, so that the bimetallic traps are just right for open work. Care has been taken with the designs, also, with a view to the manufacture of a handsome and symmetrical shape for exposed work, under sinks and basins. They are made in 1¼ and 1½ inch sizes, either plain or vented, and samples are sent by freight or express when requested. The Sportsman's Shot Works issue a catalogue of their bimetallic traps which they claim is the most complete trap catalogue ever published. Architects and builders who wish to keep pace with modern sanitary improvement should have this catalogue.

THE ARCHITECTS' DIRECTORY.—"The Architects' Directory" for 1895-96, containing a list of the architects in the United States and Canada, classified by states and towns, giving the architectural associations to which they belong, has, the publisher states, been prepared with great care to secure accuracy of both name and location. It is published by William T. Comstock, 23 Warren street, New York; bound in red boards, gilt title. 16mo, price $1.

THE new electric light plant at the county house has been formally accepted by the supervisors' committee. The test made in their presence showed about one per cent variation in the voltage of the dynamo, between no load and 100 amperes. This means that it will require but little regulation as well as attention. A test of the engine built by the Buffalo Forge Company was also made and was very gratifying to all interested parties. Engines specially made for electrical work require very exact regulation, in fact it is a necessity in the up-to-date engine. The plant was installed by an electrical engineer of this city, Mr. C. M. White, who was employed by the committee for the purpose. While the number of lights was increased a third the cost of the plant was a third below the original estimate of $3,500, which reflects much credit on Mr. White.—*Buffalo Evening Times.*

RAILROAD NOTES.

ATLANTA EXPOSITION.—One of the greatest fairs ever known to America. Many features of the Chicago World's Fair and many additional and new ones. Open September 18 to December 31, 1895. Low rates via the Queen & Crescent Route. Write to W. C. Rinearson, general passenger agent, Cincinnati, Ohio, for printed matter, or call upon Queen & Crescent agents for full information.

THE Monon Route will, on October 20, 1895, put on a new fast train for Atlanta and the South. Train leaves Chicago 10:15 A.M., arrives Louisville 7:39 P.M., Nashville 2:15 A.M., Chattanooga 7:10 A.M., Atlanta 11:15 A.M., making the run from Chicago to Atlanta in twenty-five hours. Returning, the train will leave Atlanta 3:00 P.M., Chattanooga 8:00 P.M., Nashville 1:10 A.M., Louisville 7:36 A.M., arriving Chicago 5:30 P.M. This train is equipped with elegant coaches, parlor car and dining car, Chicago to Louisville, and connects in union depot with Louisville & Nashville train, running through to Nashville, Chattanooga and Atlanta and the South.

THE INLAND ARCHITECT AND NEWS RECORD

Vol. XXVI. ADVERTISERS' TRADE SUPPLEMENT. No. 5

Valuable Publications Free.

Any architect can secure valuable books of reference without cost by sending for the catalogues of materials, etc., noticed from month to month in these columns. Large sums are spent on these catalogues, and they contain much practical information. Many are art productions. They may be obtained free on application to those issuing them. In writing please mention THE INLAND ARCHITECT, and oblige the journal and the dealer.

REQUESTS FOR CATALOGUES AND SAMPLES.

Those wishing catalogues and samples sent them by dealers in general may have their names inserted under this heading free of charge. The only recompense desired is that the dealers who send catalogues to these addresses give THE INLAND ARCHITECT due credit for business benefits that result.

J. C. METZLER, Architect, 66 Stanton street, New York, N. Y.

AUGUST F. SCHROTER, Architect, 408 East Tenth street, New York city.

J. W. MORRISON, Architect, Gokey Block, Jamestown, New York.

MORRIS M. GLEICHMAN, Architect, Room 15 Nottingham Building, Cleveland, Ohio.

WILLIAM WATERS, Jr., Architect and Superintendent, 126 West Washington street, Green Bay, Wisconsin.

TRADE NOTES.

THE Follansbee Brothers Company, Pittsburg, Pennsylvania, successors to the old established firm of J. B. Scott & Co., have purchased additional ground adjoining the Allegheny Tinning House, and will enlarge their plant. They have already ordered new machinery for this purpose. With this increased capacity, they will be able to fill all orders promptly and keep pace with their increasing business.

THE George E. Watson Company, dealers in paints, oils and varnishes, of 38 Randolph street, Chicago, have recently given a series of private exhibitions of the Martin process of fireproofing, for which they are western agents. The tests were remarkable. Wood saturated with the kalzite, or basic chemical of the Martin process, could not be heated to inflammability, even in the fierce flame produced by a Bunsen burner. A shingle dipped in their oil paints was held, after drying, in an ordinary gas jet for several minutes, the result being that the wood was thoroughly charred but at no time burst into flame, even after the oil had been entirely fried off. The preserving chemical when applied direct, or in the form of paint or calcimine, penetrates the pores of the wood, and on an application of intense heat the resultant gases destroy the flames. Interiors treated throughout with these paints can never burst into flame, and it is well known that a smoldering fire spreads very slowly and with great difficulty. The Martin process paint is but little more expensive than ordinary paint. It has been used extensively and recommended by the United States and French governments. Their kalzite liquid is odorless, colorless and harmless, and is used successfully for fireproofing theatrical curtains, etc., and all kinds of textile fabrics.

I. P. FRINK, 551 Pearl street, New York, whose justly celebrated reflectors are used so extensively, has recently equipped the following prominent buildings: Evangelical Lutheran Church, Cumberland, Md.; Baptist Church, Amherst, N. S.; St. Paul's School, Lagos, West Africa; Lutheran Church, Van Wert, Ohio; Drill Hall, 23d Regiment Armory, Brooklyn; Evangelical Church, Wilkes-Barre, Pa.; Central Presbyterian Church, Akron, Ohio; Opera House, Portland, Ind.; St. Matthew's Lutheran Church, Hanover, Pa.; Holy Trinity Church, McSherrystown, Pa.; Baptist Church, Elberton, Ga.; M. E. Church, Quitman, Ga.; Baptist Church, Franklin, Ohio.

FROM the numerous testimonials constantly received by the Buffalo Forge Company the following is selected:

BUFFALO, N. Y., August 8, 1895.

The John C. Jewett Manufacturing Company, Buffalo, N. Y.:

GENTLEMEN,—Replying to your favor of the 29th ultimo, inquiring as to the results of our experience in the use of the forced-draft system, supplied by the Buffalo Forge Company, will say that we are even more impressed with the advantages accruing from its use than when we furnished them with our first letter of approval about a year ago. No matter how damp or foggy the atmosphere, we have no difficulty in obtaining all the draft required.

As regards smoke, we find the system reduces this baneful nuisance to a minimum. In fact, its service is so complete in this respect that we can find no excuse for our neighbors' troubling us with their chimneys, and we are contemplating the entry of a formal request to the proper authorities for the abatement of this nuisance as altogether unnecessary. Yours very truly, SCHOELLKOPF & CO.,
Per H. M. L.

TIFFANY PRESSED BRICK COMPANY, manufacturers of enameled and pressed brick, are proud of the following testimonials from high authorities:

CHICAGO, September 28, 1895.

J. Van Inwagen, Esq., President Tiffany Pressed Brick Company, Chicago:

DEAR SIR,—We have used large quantities of the "Tiffany" enameled brick and believe them to be, in quality and finish, fully equal to the best English product. We have found it an especial convenience to be able to obtain special shapes without delay.

Very truly yours,
ADLER & SULLIVAN.

CHICAGO, September 26, 1895.

J. Van Inwagen, Esq., President Tiffany Pressed Brick Company, Chicago:

DEAR SIR,—Having used about 120,000 of the "Tiffany" enameled brick in the construction of the new Guaranty office building, Buffalo, New York, we are pleased to state that they have given the owners, as well as ourselves, perfect satisfaction, and we believe them to be equal, if not superior, to any enameled brick made in this country or elsewhere.

Prompt delivery was an especial feature.

GUARANTY CONSTRUCTION CO.,
By GEORGE M. MOULTON, *President.*

CHICAGO, November 2, 1894.

J. Van Inwagen, Esq., President Tiffany Pressed Brick Company, Chicago:

DEAR SIR,—We have used about 160,000 of your American manufactured enameled brick (English size) in the Marquette building, the largest and most expensive office building in the West. They have proved very satisfactory as to quality, finish, etc., and we believe them to be equal to those of the best English manufacture. Yours truly,

GEORGE A. FULLER COMPANY,
Per GEORGE A. FULLER, *President.*

THE following circular has been issued by Lawrence Mendenhall, Cincinnati: "After a successful career of fourteen years, it is my intention to enlarge my present business, and associate with me my brothers, Rudolph and Robert B. Neff. The enlargement will partake of the nature of a building exhibit, making possible thereby a better display of your goods, as well as other lines. Only one firm in each line will be represented. It is our intention to have every facility in the way of complete office arrangements for client, architect and contractor, and to represent our exhibitors on commission. These increased facilities mean considerable additional expense, to meet which we will charge as follows: Floor space, $1.50 per square foot, and all wall space at one-half this rate, payable quarterly. You will see that this enterprise, if properly developed and carried out, will prove mutually beneficial, by keeping your wares before the public at the lowest expense, and in the most advantageous manner. The architects have assured me of their hearty coöperation, which renders success a certainty."

IN the line of portable forges, operated by fan blast for the use of structural ironworkers, that made by the Buffalo Forge Company is superior. They have many distinctive features, all giving this forge the greatest possible strength combined with compactness. In fact, it is practically indestructible. This, with the powerful, positive and continuous blast produced, with escape valves which prevent all possibility of explosion, makes this a forge that is always ready and that can be shipped anywhere without boxing.

NOTICE TO ARCHITECTS.

The school trustees of Terre Haute, Indiana, desire to secure plans for two new school buildings. Address Superintendent William H. Wiley for circulars of information.

SOME LETTERS TO THE W. C. VOSBURG MANUFACTURING COMPANY.

RECOMMENDATORY—READ WHAT THEY SAY.

Office of W. F. & John Barnes Company, Rockford, Ill., January 15, 1895.—The electric and gas combination fixtures that you have supplied for our rebuilt Congregational church are being admired by all who see them, especially the pillar lights. While the finish is decidedly antique, yet the fixtures appear to be in perfect harmony with other furnishings and give a very pleasing effect. We thank you for your considerate attention in this matter. Signed, JOHN BARNES, Ex-Chairman Building Committee and Board of Trustees Second Congregational Church.

First National Bank, Ludington, Mich., September 13, 1894.—Your workman has completed the work of placing in position the gas and combination fixtures furnished by you for the Mason county courthouse. They have done the work very satisfactorily and the goods are apparently what we expected, and I think will prove entirely satisfactory. Signed, FRANK P. DUNWELL, Secretary Building Committee.

Office of James B. Goodman & Co., Chicago, January 23, 1895.—I beg to say that the electric light fixtures manufactured by you and placed in the new building of the Calumet Club are perfectly satisfactory and have been the subject of commendation among the members. Considering that the contract limited you to the forms shown by drawings and described by specifications and intended to produce certain effects for a limited appropriation, it is a subject of congratulation that the result obtained is so eminently satisfactory. Signed, JAMES B. GOODMAN, Building Committee.

Charles S. Frost, Architect, Chicago, January 29, 1895.—Permit me to express my entire satisfaction at the completion of your contract covering all electric fixtures in the new Calumet Club building. They are in perfect harmony with their surroundings, combining simplicity and grace of outline with well considered economy, and the whole work has been promptly and skillfully executed. Signed, CHARLES S. FROST.

Office of Davis & Requa, General Insurance Agents, Chicago, January 18, 1895.—The gas fixtures in my house are now complete and seem a very satisfactory piece of work. Signed, S. F. REQUA.

Park Theater, Henderson, Ky., January 22, 1895.—I take pleasure in saying that the gas and electric fixtures, amounting to over $900, put in the Pythian office building and the Park theater by you, are not only satisfactory but have been much admired. The workmanship is excellent, and the taste shown in the execution of the designs I consider very creditable. Signed, JAMES E. RANKIN, President.

Probably in no other incident of the interior decoration or furnishing of a house does the presence or absence of the genuine fine art feeling manifest itself so frequently as in the gas and electric fixtures. W. C. Vosburgh Manufacturing Company, whose Western house is at Chicago—C. A. Vosburgh, resident manager—are ready to show the exquisite designs as evidence of their genuine art feeling as well as thorough workmanship in developing those ideas in the realm of designing beautiful effects. The house has a deserved high standing East and West, some of the special designs shown by them being marvelously beautiful, and yet in so

quiet and modest a way that they are not at all obtrusive in their artistic lessons. Their business has been one of steady growth from 1865, and their trade extends throughout the whole United States, and their works have been enlarged, with the best of machinery and skilled mechanics, to fill their increased orders from the trade and owners. We recommend to owners who are erecting new edifices, or to those who are about to furnish their houses to see Mr. Vosburgh and trust the matter to him, as he will serve them better than they can serve themselves.

RAILROAD NOTES.

CHICAGO TO JACKSONVILLE, FLORIDA.—The Monon Route with its customary enterprise has put on a new fast train that makes the run between Chicago and Jacksonville in 35½ hours. This train is composed of elegant Pullman perfected safety vestibuled, open and compartment sleepers, including drawing-room and buffet sleepers, as well as comfortable day coaches, with Monon celebrated high back seats. This train leaves Chicago daily at 8:32 P.M., arriving at Cincinnati next morning 7:30, Chattanooga 5:50 P.M., Atlanta 10:40 P.M., reaching Jacksonville at 8:20 the second morning, in ample time to make connection with all lines for points in central and southern Florida. This is the fastest time ever made by any line between Chicago and Florida. Frank J. Reed, General Passenger Agent, Chicago. City Ticket Office, 232 Clark street, Chicago. For time cards, pamphlets and all other information, address L. E. Sessions, Northwestern Passenger Agent, Minneapolis.

THE Queen & Crescent announces half rates to southern points as follows:

November 19 and December 3 and 17—Round-trip tickets to all points in North and South Carolina.

November 26 and 27, and December 10 and 11—To all points Arkansas and Texas.

December 10—to all points on the Queen & Crescent route and Alabama Great Southern Railroad, south of Somerset, Kentucky, except New Orleans, Louisiana.

The above tickets will be sold at one fare for the round trip plus $2, and are good to return thirty days after date of sale. Full particulars given gladly. Charles W. Zell, D. P. A., Fourth and Race streets, Cincinnati, Ohio; W. A. Beckler, N. P. A., 111 Adams street, Chicago, Ill.; C. A. Baird, Trav. Pass. Agt., Detroit, Mich.; W. W. Dunnavant, T. P. A., Cleveland, Ohio; W. W. Jones, Immigration Agent, Port Huron, Mich.; W. C. Rinearson, G. P. A., Cincinnati, Ohio.

ANNUAL half-rate excursions to Canada via Chicago & Grand Trunk Railway.—The Chicago & Grand Trunk Railway has arranged for the usual half-rate holiday excursions to principal points in Canada for season of 1895.

Thursday, December 19,
Friday, December 20,
Saturday, December 21.

Tickets good to return up to and including January 9, 1896. Avail yourself of this opportunity to visit Canada and spend the holidays with the folks at home. All through trains of the Chicago & Grand Trunk Railway pass through the great St. Clair Tunnel, one of the wonders of modern engineering skill, and is the only line offering the public advantages of through Pullman car service to Canadian points. Tickets may also be purchased reading via Detroit, if desired. Excursion tickets on sale at all stations. For further particulars apply to ticket agent, 103 South Clark street.

THE INLAND ARCHITECT AND NEWS RECORD

Vol. XXVI. ADVERTISERS' TRADE SUPPLEMENT. No. 6

Valuable Publications Free.

Any architect can secure valuable books of reference without cost by sending for the catalogues of materials, etc., noticed from month to month in these columns. Large sums are spent on these catalogues, and they contain much practical information. Many are art productions. They may be obtained free on application to those issuing them. In writing please mention THE INLAND ARCHITECT, and oblige the journal and the dealer.

REQUESTS FOR CATALOGUES AND SAMPLES.

Those wishing catalogues and samples sent them by dealers in general may have their names inserted under this heading free of charge. The only recompense desired is that the dealers who send catalogues to these addresses give THE INLAND ARCHITECT due credit for business benefits that result.

J. C. METZLER, Architect, 66 Stanton street, New York, N. Y.

AUGUST F. SCHROTER, Architect, 408 East Tenth street, New York city.

J. W. MORRISON, Architect, Gokey Block, Jamestown, New York.

E. A. PHILLIPS and A. PENTECOST, Architects, Buffalo, N. Y.

WILLIAM WATERS, Jr., Architect and Superintendent, 126 West Washington street, Green Bay, Wisconsin.

ROOFING TIN.

The attention of our readers is called to the advertisement of Messrs. N. & G. Taylor Company, manufacturers of tin plate, Philadelphia, in our present issue, particularly those who are interested in wanting a "good tin roof." They advertise the "Taylor Old Style" extra heavily coated, as being the only roofing tin made exactly the same as in 1830. They further state that roofing tin, or what is known as "terne" plates, was originally made in Philadelphia in 1830, and then handled by Messrs. N. & G. Taylor Company. The original way of making terne, or roofing plates, was by dipping sheets of bright tin in open pots of metal, it being strictly a hand-dipped or double-coated process. This is the same method as is employed in the manufacture of the "Taylor Old Style" brand at Messrs. N. & G. Taylor Company's works in Philadelphia. This house recently sent out an invitation to the trade entitled "Open Doors — There are no Secrets in Making the Best Goods."

The "Taylor Old Style" brand has now attained a world-wide reputation. It is handled by leading jobbers throughout the United States and covers numerous prominent buildings. It is also indorsed by the United States government and the list of buildings as shown on the circular issued by Messrs. N. & G. Taylor Company is certainly a very flattering record.

As above stated, this reliable brand of tin has undoubtedly secured its great popularity through its wear or durability. This is secured by the simplicity of its manufacture, no rolls or machinery are used to squeeze off the coating, nor acid flux used. These methods are adopted by modern manufacturers to cheapen the cost, whereas in the manufacture of the "Taylor Old Style" brand, each sheet is dipped by hand in open pots of metal with different degrees of temperature, each sheet thus containing every ounce of metal that it is possible to secure. It is made by what is known as the "Palm Oil" process throughout, no acid flux being used, the manufacturers claiming that the use of acid is disastrous to the life of roofing tin, and many architects now throughout the country are incorporating in their specification, in addition to the name of the brand of tin specified, that no acid flux plates will be accepted. By the use of the "Taylor Old Style" brand, each sheet of which is stamped with the brand and thickness, you will virtually secure a brand that will outlast the life of the building itself.

THE vestibuled café and library cars on the Wabash fast day trains between St. Louis and Chicago are models of elegance and comfort. Meals in these cars are served *à la carte* at reasonable rates.

DIXON'S SILICA GRAPHITE PAINT, manufactured by the Joseph Dixon Crucible Company, of Jersey City, New Jersey, will be used in painting all the tinwork and skylights of the Post Office Department Building at Washington. A quantity will also be used on the Capitol, and the District Government Building.